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COVER: The combination conference room and reading room of the AMERICAN INSTITUTE OF PHARMACY, A. PH. A. headquarters in Washington, D. C., is shown in the photograph. It has become a favorite meeting spot for executive groups of pharmacy and scientific committees in the capital. The stacks of the A. PH. A. library are reached through the door to the left.

THIS ISSUE combines the June and July Journals to permit us to advance the publication date one month and to conserve our paper allotment. The Journal will continue to reach you at the usual time each month, the August issue appearing about July 25.

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Practical Pharmacy Edition

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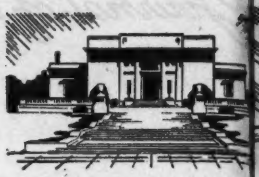


The Way To

THE first step in giving a pharmaceutical burial to the dead language of Latin was taken at the recent meeting of the Committee on National Formulary. At this session, which marked a thorough scientific revision of the National Formulary (see page 163), it was voted to use English as primary drug titles for the first time in the history of official compendia. Modern trends in medical and pharmaceutical science make it advisable that other compendia follow the lead of the National Formulary.

Since medications are naturally ordered in the language preferred by physicians, abandonment of the long-standing tradition of using pidgin Latin for drug terms was contingent upon medical usage. Now that the modern physician speaks in and for English, the outmoded arguments for Latin are no longer valid.

Some will say that we are giving up a mark of distinction and learnedness—that we should retain the air of mystery that Latin and other esoteric appurtenances give to the pharmaceutical profession. But if we must depend on an aura of mystery to enhance the appearance of pharmacy we are indeed on shaky ground. A speaking acquaintance with Latin drug terms and some phrases may enable the pharmacist to *seem* learned; but to *be* learned in more basic phases of pharmacy is more worthy of the time the busy pharmacy student now spends to obtain a sound knowledge of Latin. It is doubtful if even the present minimum of thirty-two hours of study in Latin required by the pharmaceutical syllabus can be justified in view of the present-day trend in prescribing. The few fragments of Latin that will hereafter be needed to compound and dispense drugs competently could be learned as a minor part of the student's regular pharmacy courses.

Latinic Dirge

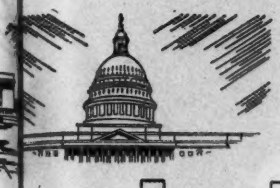
Some argue that the use of Latin conceals from the patient the kind of medication being prescribed. Yet, more often than not, the modern physician goes out of his way to explain what he is prescribing and why. If there is some legitimate reason for hiding the nature of a prescription, the physician can use abbreviations, a practice routinely followed in about 40% of all prescriptions written two decades ago, and the figure is now probably higher.

Unfortunately Latinic drug terms make poor camouflage these days when most drugs receive a Latin title by virtue of a case ending tacked onto the English counterpart—and then often not in conformity with classic Latin usage. No reasonably intelligent person will be fooled by Acidum Acetylsalicylicum instead of Acetylsalicylic Acid, or by Sulfanilamidum instead of Sulfanilamide.

These Latin appendages on the host of chemical drugs now used cause a surprising amount of confusion, however, among those in the professions who are a bit hazy on chemical terminology. In a number of instances, pharmacists have been queried about whether a familiar drug that has sprouted a "-um" or "-a" or "-is" may not be a chemical variation of the one customarily prescribed.

Latin also has its shortcomings as a universal prescription language because of the variations in drug terminology and strength of drugs between countries. Furthermore, the few travelers who use prescriptions internationally usually find that the average pharmacist will not fill a foreign prescription, particularly if it includes highly potent or narcotic drugs.

In brief, there is no reason to believe that Latin can be revived or that it would be desirable to do so. Its moribund state in



ooks To Us

recent years is perhaps primarily due to the attitude of medical educators. This is emphasized by the results of a survey reported to the ASSOCIATION'S Practical Pharmacy Section in 1940 by Dr. J. P. Miale of the Columbia University College of Pharmacy. Of the 80% of the nation's medical school deans who answered the questionnaire, nearly two-thirds said that the use of Latin is not justified in prescription writing. Forty per cent of the schools reporting taught no prescription Latin as such.

A majority of the medical deans replying noted that abbreviated Latin forms, such as *t. i. d.* and *p. c.*, are a convenient shorthand for the busy practitioner. It is probable that these handy symbols will remain in usage long after Latin titles have disappeared. The fastidious may well object to such a mixing of Latin and English in a prescription, but it is doubtful that English abbreviations can be popularized to replace them. *Hora somni* has long since become a stranger to most pharmacists and physicians; its abbreviations, *h. s.*, is only a sign that is universally recognized to mean "just before retiring."

Deletion of Latin for the primary official titles in the N. F. is obviously a rational and progressive step. Latin will be rightfully retained as a secondary title, for the centuries-old custom of using Latin will linger in some areas for many years.

Synthetic Quinine

MAN'S centuries-old search for an effective antimalarial may have been brought a step nearer by the brilliant work of Drs. Robert Woodward and William Doering, which resulted in the first total synthesis of quinine reported in May. Yet, the complexity of the procedure, involving over twenty main steps, is such that the practical significance of synthetic quinine itself will no doubt be nil during the war unless it is much longer than expected. Of more importance are the new avenues of research in alkaloidal chemistry opened by this achievement.

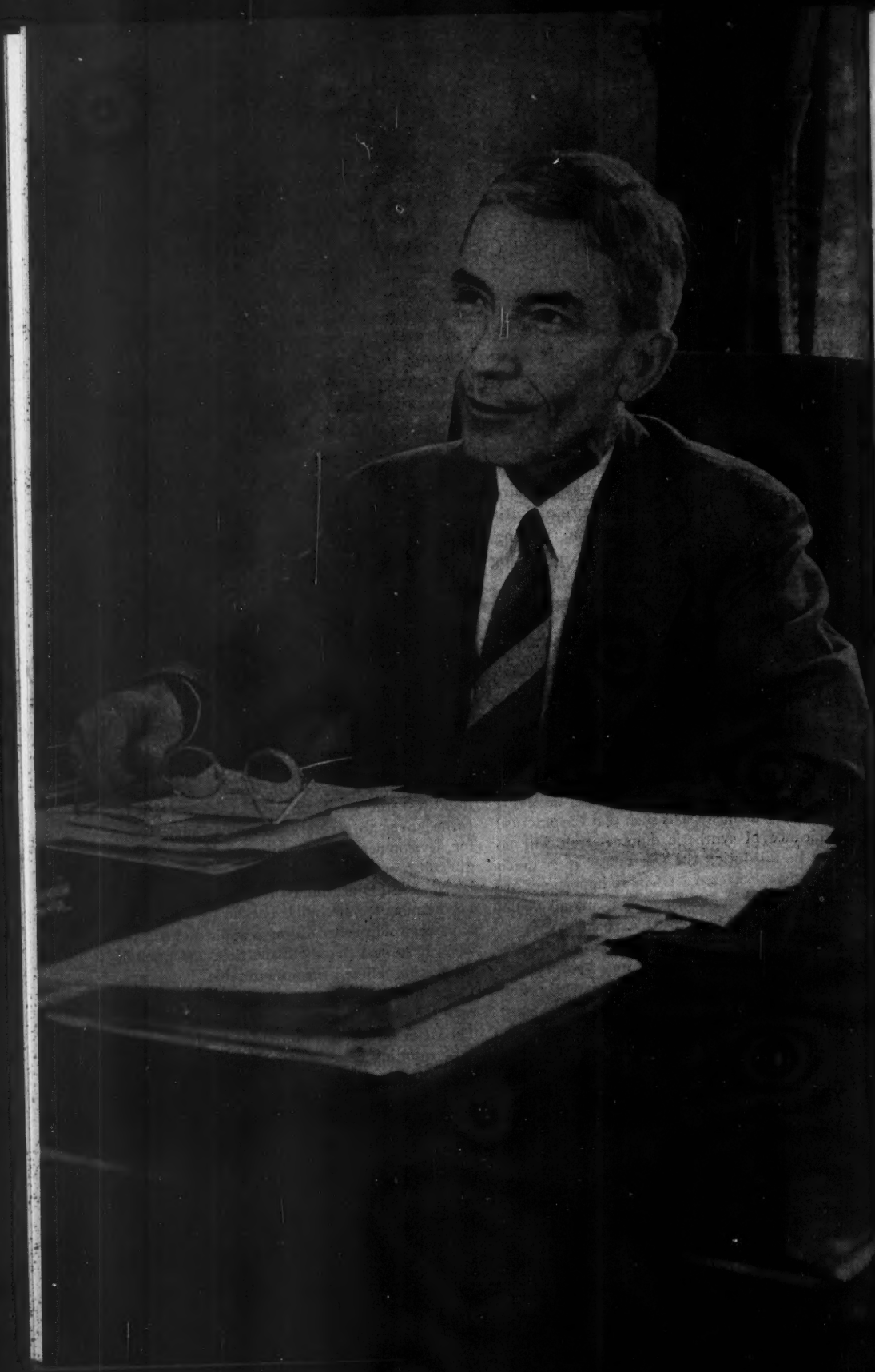
Experience at the malaria-infested battlefronts sharply accentuates the long-known shortcomings of quinine. Even after a careful course of treatment—not easily attained under most military conditions—the parasitic plasmodia often still lurk in the blood of malaria victims.

As a result, the announcement of synthetic quinine got a somewhat cooler reception in some scientific quarters than might have been expected. Current talk in Washington science circles indicates that quinacrine is becoming the drug of choice, although far from ideal.

Probably the largest secret research project in pharmaceutical chemistry today is the quest for a really good antimalarial. Everything has been hush-hush but it is doubtful that a drug has yet been discovered that will decisively defeat our malaria enemy in this war.

It is therefore wise that—as our information indicates—the synthetic quinine process will be turned over to several commercial laboratories for developmental work to see if the extremely difficult procedure cannot be put on a production basis. Results are unpredictable, and certainly not imminent, but similar chemical complexities have been unravelled through applied chemistry when it seemed that both the time and price of production offered insurmountable handicaps. Pharmacologic tests are also being planned on both the synthetic quinine and its optical isomer. The latter is a mirror-image of the quinine molecule, resulting from the synthesis, that does not occur in nature.

There is the additional hope that one of the intermediates or a derivative stemming from the Woodward-Doering synthesis will provide a missing piece to the pharmaceutical puzzle of supplying an effective antimalarial. In any event, the brilliant achievement of the two 27-year-old chemists merits the applause of every pharmacist.



After Decades of Service

DR. E. F. KELLY PLANS RETIREMENT

A. PH. A. SECRETARY NATIONALLY AND INTERNATIONALLY KNOWN FOR HIS PRACTICAL DEVOTION TO AIMS AND IDEALS OF TRUE PHARMACY

AFTER nearly twenty years of service to the profession as executive secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION, Dr. E. F. Kelly has announced his intention to retire. His slight, active figure, topped with silvery hair, has been a familiar sight wherever American pharmacists congregate to discuss their problems. Because of his unswerving loyalty to professional ideals, his practical wisdom and staunch integrity, pharmacists have turned to him for guidance in every crisis.

Dr. Kelly's uncanny knack for firm diplomacy —with a smile—has moved obstacles to professional progress and harmony where the iron fist of more dogmatic leaders has failed. Despite trends that have discouraged many during the past two decades, the A. PH. A. secretary has lost none of his optimism and faith in the basic soundness of the pharmaceutical profession. "How I would like to exchange places with you," Dr. Kelly will tell a younger man. "We're making progress but so much work remains to be done. If I could only turn back my clock twenty years," he adds wistfully. Not that he intends to retire from active interest and work when he sheds his official title. But, as the 65-year-old secretary wisely pointed out to the ASSOCIATION Council, a younger man had best be selected for the position while his health will still permit active coöperation in orienting a new secretary to the increasingly complex and burdensome duties in professional and official Washington life.

Plans have been made to select a candidate for the post not later than the 1945 ASSOCIATION meeting so that action can be taken by the House of Delegates at that time. A. PH. A. representatives will soon name a committee to select nominees for consideration by the Council.

When this action is taken it will bring to a close what Dr. Kelly himself considers the most satisfying chapter in his life. He has passed up many opportunities for more lucrative positions to devote his time to the objectives of the ASSOCIATION. Before becoming secretary he had already achieved what would ordinarily be a lifetime's work.

Dr. Kelly's first interest in pharmacy was aroused while still living with his father in Carthage, N. C. A friend of the family who operated a pharmacy in Green Cove Springs, Fla., needed an able clerk and asked young Frank to help out. Thus, much like every pharmacist, Dr. Kelly got his start. It was here, also that he met Marian Low who was later to become his wife. They have since had four children: Evander Francis Jr., Kenneth, Kathleen and Lauchlin.

After a year Dr. Kelly entered the Maryland College of Pharmacy, which was later to become the present College of the University of Maryland. During the summers of undergraduate years he worked in pharmacies in Baltimore and Washington. There he learned to know some of the pharmaceutical leaders of the time and soon caught the attention of Charles Schmidt, superintendent at Sharp and Dohme.

One day late in 1902, just before receiving his degree from pharmacy college, Dr. Kelly was invited down to Mr. Schmidt's for a "bite to eat." His dinner companion turned out to be Louis Dohme, one of the founders of Sharp and Dohme, who, after the second cup of coffee, hired the young pharmacist as manager of the laboratory's stock room. Up to that time each department maintained its own stock room, buying independently in small drug lots. Dr. Kelly's administrative ability first showed up in a reorganization that centralized all stock in a separate department, enabling the firm to buy drugs in large bulk quantities, with each department then buying as needed from the firm's own storeroom. This led to a variety of special jobs, such as revising the firm's labels, standardizing packages and work in various departments, in preparation for advancement to assistant superintendent and later to the post of superintendent.

Meanwhile, Dr. Kelly had been serving as a part-time faculty member at his alma mater.

The famous pharmacist and then dean of the College, Dr. Charles Caspari, Jr., had retained Dr. Kelly after graduation as his assistant. In 1906 he was made associate professor. Five years later he resigned from the work he had been carrying on simultaneously at Sharp and Dohme to devote more time to pharmaceutical education. Because of his background, however, he continued to serve as a consultant in manufacturing pharmacy to various firms for about seven years.

In 1916 he was made professor of chemistry in the University of Maryland Dental School, and a year later also accepted the chair in pharmacy upon the death of Prof. Caspari. From 1918 to 1926 Dr. Kelly served as dean of the Pharmacy College and has since served as advisory dean. For more than twenty-five years he has also been lecturer in pharmacy at the Johns Hopkins Medical School.

Secretary Since 1926

Dr. Kelly's resignation as dean came in 1926 when he was elected to his present post as executive secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION. His ASSOCIATION work had begun in 1905, and about a year later he helped to organize at Baltimore one of the first local branches. He subsequently served as its secretary and president. In 1907 he became secretary of the Maryland State Pharmaceutical Association, a post he held until 1942.

At the Chicago A. PH. A. meeting in 1918, the present secretary was made second vice-chairman of the House of Delegates. In successive years he advanced to first vice-chairman and chairman. Under his guidance during the three years he held office as chairman, the House of Delegates was reorganized so that the affiliated state associations were given their present controlling power in the ASSOCIATION'S legislative body. During the four years immediately prior to his selection as secretary, Dr. Kelly served as ASSOCIATION treasurer.

Thus he brought to the secretaryship a wealth of experience from retail practice, manufacturing pharmacy, pharmaceutical education and ASSOCIATION work.

At this time the ASSOCIATION officers were quartered in rented rooms at 10 West Chase Street in Baltimore. Ground work had already been laid, however, for the project that was to place the ASSOCIATION in an imposing marble building near the Lincoln Memorial on historic Constitution Avenue in the nation's capital. Construction work got under way in July 1932 and on January 1, 1934, Dr. Kelly and his staff of four moved into the AMERICAN INSTITUTE OF PHARMACY. As the secretary puts it: "We rattled around like peas in a pod." But it was not for long. Due to Dr. Kelly's administrative ability, the coöperation of the energetic group of men associated with him, and the support of those in all branches of the profession, every office was soon buzzing with activity.

Within a few years a research laboratory was in operation; the museum was a point of interest for Washington tourists; the reference library had overflowed its bounds; publication offices were strewn with proofs from a half dozen publications. The personnel increased to a hard-pressed staff of twenty.

Dr. Kelly looks back on the establishment and growth of the AMERICAN INSTITUTE OF PHARMACY, the A. PH. A. headquarters, as perhaps the most significant event in the profession during his tenure of office, for it symbolizes the increase in service and prestige of true pharmacy.

A host of activities and achievements in which he played an important role vie for mention in a short review of the secretary's service: strengthening state associations, pharmacy corps bill, higher educational standards, proper food and drug legislation, higher drug standards, fair government regulations, interprofessional relations, adequate recognition of pharmacy and pharmacists by government agencies, and public health legislation—as examples.

Many Activities

Some additional offices and memberships Dr. Kelly has held include Maryland Board of Health (since 1920), U. S. P. Revision Committee (1920–1930), U. S. P. Board of Trustees (since 1930; chairman since 1940), Pharmacopœial Convention (since 1910), American Council of Pharmaceutical Education (since 1932), vice-president American Association of Colleges of Pharmacy (1921), American Association for the Advancement of Science, Maryland Academy of Sciences, secretary-treasurer Drug Trade Conference, secretary-treasurer National Drug Code Authority, acting editor JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, editor PRACTICAL PHARMACY EDITION of the JOURNAL, reviser Caspari's *Treatise on Pharmacy*, chairman of the board of trustees of the University of

Maryland Endowment Fund and membership on scientific committees.

In recognition of these many services to the profession, Dr. Kelly received the Remington medal in 1933 and in the same year was given an honorary doctorate of science from Temple University. Yet, many have expressed the opinion that no award can fully recognize the impetus to the upward struggle of American pharmacy that the life, work, and character of E. F. Kelly are giving and will continue to give in coming years.

Committee Plans Extensive

Changes in New N. F.

NEARLY A THIRD OF DRUGS ARE DELETED TO BRING COMPENDIUM UP TO DATE WITH THERAPEUTICS, ENGLISH PREFERRED FOR TITLES

EXTENSIVE changes in the National Formulary affecting the practice of every pharmacist were planned at the meeting of the ASSOCIATION'S Committee on National Formulary held at the AMERICAN INSTITUTE OF PHARMACY, Washington, D. C. Tentative decisions call for the deletion of 196 drugs, or nearly a third of the present monographs. Addition of 115 new monographs was authorized, although standards may not be developed for all of them in time for inclusion in the eighth revision, which is expected to be published late in 1945.

Because of the importance of official standards in providing pharmacists with dependable, uniform drugs and helpful dispensing information, representatives of the nation's pharmacists who direct the revision work plan to invite each state pharmaceutical association and the individual pharmacist to participate in an advisory capacity.

The pharmacists' prescription records and dispensing knowledge, which indicate the extent of drug use, provide an important criterion for admissions and deletions to the National Formulary. Comments concerning changes or additions in the following list of deletions and admissions planned for N. F. VIII are invited. Drug names in parentheses are commercial synonyms by which the drugs have heretofore been commonly known:

Approved Deletions from N. F. VII

Adonis; Aletris; Ammonium Hypophosphite; Apocynum; Artificial Carlsbad Salt; Artificial Vichy Salt; Artificial Kissingen Salt; Asarum.

Berberis; Blue Flag; Bryonia.

Cactus Grandiflorus; Calcium Creosotate; Calendula; Calumba; Camphorated Chloral; Camphorated Menthol; Castanea; Caulophyllum; Celery Fruit; Chimaphila; Chionanthus; Cocculus; Condurango; Convallaria; Corydalis; Cow's Milk; Crocus; Croton Oil.

Damiana; Dental Liniment of Aconite and Iodine, Compound; Diluted Hydrocyanic Acid; Dioscorea.

Echinacea; Effervescent Artificial Carlsbad Salt; Effervescent Artificial Kissingen Salt; Effervescent Artificial Vichy Salt; Effervescent Salts; Effervescent Salt of Lithium Citrate; Effervescent Salt of Magnesium Sulfate; Effervescent Salt of Potassium Bromide, Compound; Egg; Egg Yolk; Elixir

of Bismuth; Elixir of Buchu and Potassium Acetate; Elixir of Buchu; Elixir of Buchu, Compound; Elixir of Calcium Lactophosphate; Elixir of Euphorbia, Compound; Elixir of Gentian and Iron; Elixir of Guarana and Celery; Elixir of Hydrangea and Lithium; Elixir of Hydrastis, Compound; Elixir of Pepsin and Bismuth; Elixir of Pepsin, Bismuth and Strychnine; Elixir of Phosphorus; Elixir of Viburnum Opulus, Compound; Emulsion of Cod-Liver Oil with Egg; Emulsion of Cod-Liver Oil with Hypophosphites; Ethereal Tinctures; Euonymus; Eupatorium; Euphorbia Pilulifera; Exsiccated Sodium Sulfate; Extract of Aloe; Extract of Gelsemium; Extract of Hydrastis; Extract of Sumbul; Extract of Taraxacum; Extract of Valerian.

Fluidextract of Aletris; Fluidextract of Apocynum; Fluidextract of Berberis; Fluidextract of Buchu, Compound; Fluidextract of Calendula; Fluidextract of Calumba; Fluidextract of Castanea; Fluidextract of Caulophyllum; Fluidextract of Celery Fruit; Fluidextract of Chionanthus; Fluidextract of Condurango; Fluidextract of Convallaria; Fluidextract of Cotton Root Bark; Fluidextract of Cubeb; Fluidextract of Damiana; Fluidextract of Dioscorea; Fluidextract of Echinacea; Fluidextract of Euonymus; Fluidextract of Euphorbia Pilulifera; Fluidextract of Frangula; Fluidextract of Guarana; Fluidextract of Humulus; Fluidextract of Hydrangea; Fluidextract of Jalap; Fluidextract of Juniper; Fluidextract of Kola; Fluidextract of Krameria; Fluidextract of Lappa; Fluidextract of Leptandra; Fluidextract of Oat; Fluidextract of Phytolacca; Fluidextract of Quassia; Fluidextract of Rhamnus Cathartica; Fluidextract of Rose; Fluidextract of Sanguinaria; Fluidextract of Sarsaparilla, Compound; Fluidextract of Serpentaria; Fluidextract of Stillingia; Fluidextract of Trifolium; Fluidextract of Trillium; Fluidextract of Viburnum Opulus; Fluidextract of Xanthoxylum; Fluidglycerates; Frangula.

Gallic Acid; Glycerite of Bismuth; Glycerite of Egg Yolk; Glycerite of Pepsin; Guaiacol Carbonate; Guarana.

Honey of Rose and Sodium Borate; Helonias; Humulus; Hydrangea.

Infusion of Gentian, Compound; Infusion of Senna with Magnesium Sulfate; Iodine Petroxolin.

Kola; Krameria.

Lappa; Liquid Petroxolin; Lithium Benzoate; Lithium Carbonate; Lithium Citrate; Lithium Salicylate; Lupulin.

Manna; Mitchella; Monobromated Camphor.

Oat; Oil-Sugars; Ointment of Mustard; Ointment of Potassium Iodide; Ointment of Zinc Stearate; Orris.

Pills of Aloe and Myrrh; Pills of Ferrous Iodide; Pills of Iron, Quinine, Strychnine and Arsenic; Pills of Rhubarb and Aloe; Phosphorated Oil; Phytolacca; Plaster of Cantharides; Potassium Sulfate; Powder of Pancreatin, Compound; Pulsatilla.

Rhamnus Cathartica.

Saccharated Ferric Oxide; Sambucus; Scutellaria; Soluble Ferric Pyrophosphate; Solution of Peptonized Iron; Spirits of Volatile Oils; Stillingia; Styptic Collodion, Sumbul; Suppositories of Boroglycerin; Syrup of Ammonium Hypophosphite; Syrup of Asarum, Compound; Syrup of Calcium Lactophosphate.

Tincture of Aloe and Myrrh; Tincture of Antimony; Tincture of Bryonia; Tincture of Cactus Grandiflorus; Tincture of Calendula; Tincture of Calumba; Tincture of Capsicum and Myrrh; Tincture of Cimicifuga; Tincture of Cocculus; Tincture of Cubeb; Tincture of Guaiac, Tincture of Jalap; Tincture of Pulsatilla; Tincture of Quassia; Tincture of Quillaja; Tincture of Sanguinaria; Tincture of Serpentaria; Tincture of Squill; Tincture of Viburnum, Compound; Tinctures of Fresh Drugs; Trifolium; Trillium; Troches of Elm.

Viburnum Opulus.

White Sandalwood.

Xanthoxylum; Xanthoxylum Fruit.

Approved New N. F. Admissions

Acetylaminohydroxyphenylarsonic Acid (Acetarsone, Stovarsol); Acetylcholine Hydrobromide; Allantoin; Aluminum Citrate; Ampuls of Acetylcholine Hydrobromide; Ampuls of Calcium Levulinate; Ampuls of Indigo Carmine; Ampuls of Iron Arsenite; Ampuls of Iron Cacodylate; Ampuls of Sodium and Gold Thiosulfate; Ampuls of Sodium-Antimony III bis-catechol-2,4 disulfonate (Ampuls of Stibophen or Fuadin); Ampuls of Sodium Thioglycollate; Antimony Sodium Thioglycollate.

Barium Chloride; Benzyl Alcohol; Butyl Aminobenzoate Picrate (Butesin Picrate).

Calcium Levulinate; Capsules of Castor Oil; Capsules of Ephedrine; Capsules of Ephedrine + a hypnotic; Capsules of Phenacetin, Aspirin and Caffeine; Capsules of Quinine Sulfate; Capsules of Reduced Iron; Capsules of Saccharated Ferrous Carbonate; Capsules of Stramonium; Capsules of Theophylline with Sodium Acetate; Cetyl Alcohol; Chlorophyll; 5-Chloro-7-iodo-8-hydroxyquinoline (Vioform); Cinnamomum zeylanicum; Coal Tar, Colorless; Coconut Oil; Colloidal Silver Chloride (Lunosol); Colloidal Silver Iodide (Neo-Silvol); Curare.

Dioctyl Sodium Sulfosuccinate (Aerosol O. T.).

Elixir of Aminoacetic Acid; Elixir of Ferrous Sulfate; Elixir of Pentobarbital; Elixir of Thiamine Hydrochloride; Emulsion of Pine Oil; Extract of Sheep Bile.

Ferrous Ascorbate; Ferrous Gluconate.

Glyceryl Monostearate; Gutta Percha.

Histidine Hydrochloride; Homatropine Methylbromide (Novatropine).

Indigo Carmine; Iodized Lime (Calcidin); Iron Arsenite; Iron Cacodylate.

Jelly of Allantoin; Jelly of Gentian Violet.

Lotion of Rotenone.

Mercuric Cyanide; Methyl Cellulose; Methyl Chloride; Morphine Tartrate.

4-Nitro-3-hydroxy-mercuri-*ortho*-cresol anhydride (Metaphen); Nutgall.

Ointment Base, Hydrophilic; Ointment of Allantoin; Ointment of Butyl Aminobenzoate Picrate (Ointment of Butesin Picrate); Ointment of Chlorophyll; Ointment of Coal Tar, Colorless; Ointment of Nutgall; Ointment of Pyrethrum Flowers; Oleyl Alcohol; Ophthalmic Ointment of 4-Nitro-3-hydroxy-mercuri-*ortho*-cresol anhydride (Ophthalmic Ointment of Metaphen).

Papain; Phenyl Mercuric Chloride; Phenyl Mercuric Nitrate; Phenyl Mercuric Picrate (Merphenyl Picrate); Pine Oil; Proflavine Sulfate or Chloride; Propylene Glycol; Pyrethrum Flowers.

Resorcinol Monoacetate; Rotenone; Rubbing Alcohol.

Sippy Powders; Sodium Alginate; Sodium and Gold Thiosulfate; Sodium-Antimony III biscatechol-2-4-disulfonate (Stibophen or Fuadin); Sodium Lauryl Sulfate; Sodium Propionate; Solution of Aluminum Citrate; Solution of 4-Nitro-3-hydroxy-mercuri-*ortho*-cresol anhydride (Solution of Metaphen); Solution of Phenyl Mercuric Nitrate; Stearyl Alcohol; Sterculia Gum; Sulfonated Hydrogenated Castor Oil; *p*-Sulfonedichloramidobenzoic Acid (Halazone); Sun Tan Ointment.

Tablets of Acetylaminohydroxyphenylarsonic Acid (Tablets Acetarsone, Tablets Stovarsol); Tablets of Arecoline Hydrobromide; Tablets of Barium Chloride; Tablets of Calcium Gluconate; Tablets of Carbarsone; Tablets of 5-Chloro-7-iodo-8-hydroxy-quinoline (Tablets of Vioform); Tablets of Homatropine Methylbromide (Tablets of Novatropine); Tablets of Iodized Lime (Tablets of Calcidin); Tablets of Magnesium Hydroxide; Tablets of Pilocarpine Nitrate; Tablets of Potassium Bromide; Tablets of Santonin; Tablets of Sippy Powders; Tablets of Sodium Chloride; Tablets of Sodium Chloride with Dextrose; Tablets of *p*-Sulfonedichloramidobenzoic Acid (Tablets of Halazone); Tincture of 4-Nitro-3-hydroxy-mercuri-*ortho*-cresol (Tincture of Metaphen); Titanium Dioxide; Triethanolamine; Troches of Iodized Lime (Troches of Calcidin).

Some drugs have been admitted or retained, not because of essential therapeutic value, but because the drugs are still widely prescribed by physicians or have inherent qualities which make official standards advisable as a protection to public health.

A plan to place a special designation on the more essential or effective therapeutic agents was considered by the Committee and referred to the Subcommittee on Pharmacology and Posology for further investigation and study.

Because some rather widely used drugs, such as ovary and corpus luteum, are said to be of little therapeutic value in any dosage, the Subcommittee on Pharmacology and Posology was also directed to determine if the stated doses for a selected list of such N. F. drugs could not be replaced with a statement that the dose is to be determined by the individual physician.

English Preferred

The decision of the Committee on National Formulary to use English for primary titles overthrows the long standing tradition of using Latin as the preferred form of official pharmaceutical nomenclature (see page 158). The belief was expressed that this step is toward greater rationality and in conformity with the trend of modern medical science. Latin will still be retained as the secondary title, appearing in smaller type below the English title and occupying the place of present English titles. Titles will express as nearly as possible the nature or composition of the drugs. Whenever a drug is dispensed under a synonym given in the N. F. it will be required that the drug meet all official standards.

Discussion later centered on the possibility of omitting apothecaries' doses from the National Formulary. Through the years, the trend in use of weights and measures has been toward the metric system. Today the metric system is used throughout N. F. monographs except that doses are given in both systems. The American Medical Association has recently taken a strong stand to discourage further the use of the apothecaries' system in prescription writing.

It was the consensus of the Committee, however, that usage of the metric system was not yet sufficiently extensive to warrant deleting the apothecaries' doses in the forthcoming edition. Inclusion of apothecaries' doses, it was stated, will encourage pharmacists and pharmacy students to be familiar with both systems and thus assure safer dispensing service for those physicians who will continue to use the older system.

As a transition measure, metric doses will be given greater emphasis and prominence in N. F. VIII.

Other actions taken by the Committee included a plan to make the National Formulary more self contained, thus making it unnecessary to look up information in the Pharmacopœia in connection with certain procedures in N. F. monographs.

To authorize temporary replacements of ingredients in some formulas because of wartime shortages, a special supplement will be issued concurrently with the new edition.

In the discussion of assays it was pointed out that complicated, lengthy procedures should not be adopted when the gain in accuracy is only slight and has little practical significance. On this basis it was decided to return to the nitrometer method of assaying Spirit of Ethyl Nitrite. The distillation method of assaying ephedrine preparations was adopted to replace ethereal extraction wherever feasible.

Because there is evidence that some enteric coated pills now being dispensed do not dissolve in the intestinal tract, consideration was given to establishing standards for enteric coatings and for tablet disintegration time. The Subcommittee on Solid Preparations for Internal Use was directed to begin work on this project and report back to the Committee when more complete data are available.

Work is already under way in the laboratory of the AMERICAN PHARMACEUTICAL ASSOCIATION and coöperating institutions to perfect other standards and formulas which were approved at the important three-day session. The revision plans have yet to be confirmed by the ASSOCIATION'S Council and are subject to review by the Committee before N. F. VIII reaches the pharmacist's reference shelf.

As Production Increases

PHARMACIES WILL STOCK PENICILLIN

SUPPLIES OF PENICILLIN MAY SOON BE SUFFICIENT TO PERMIT DISTRIBUTION THROUGH RETAIL PHARMACIES, INDICATIONS AND CONTRAINDICATIONS SUMMARIZED

LIMITED supplies of penicillin will soon be available to prescription pharmacists, according to information reaching THIS JOURNAL. Meanwhile, retail pharmacists should refer physicians who wish to prescribe penicillin to a hospital. Although only about 1000 depot hospitals are now permitted to stock the drug, any hospital can obtain it from a depot, provided a supply is available and the penicillin is to be used in conditions where such therapy is indicated. All allocations are made through the Office of Civilian Penicillin Distribution, which is under the direction of Dr. John N. McDonnell, pharmacist and chief of the Drugs and Cosmetic Branch research unit in WPB's Chemical Bureau.

The hospital method of distribution was inaugurated only as a temporary measure because of the limited supply and because penicillin should be administered under hospital conditions, usually parenterally, for a selected list of diseases. As soon as the civilian supply is sufficient to permit the stocking of the drug by wholesale druggists and retail pharmacists, manufacturing laboratories will be allowed to use whatever distribution channels they prefer. Pharmacists who stock penicillin must store the ampuls at a carefully controlled temperature below 10° C. and must dispense the drug before the expiration date appearing on the label. It is expected that unused supplies will not be returnable.

At present penicillin can be used only in accordance with the instructions and recommendations in a pamphlet entitled, "Penicillin: The Indications, Contraindications, Mode of Administration and Dosage for Penicillin," which was prepared by Dr. Chester S. Keefer from a study of 3000 cases which were reported to him by

physicians in various institutions. According to the report, penicillin therapy is indicated in the following conditions:

Staphylococcic Infections with or without bacteremia: acute osteomyelitis, carbuncles (soft tissue abscesses), meningitis, cavernous or lateral sinus thrombosis, pneumonia-empyema, carbuncle of kidney and wound infections

Clostridia Infections: gas gangrene and malignant edema.

Hemolytic Streptococcic Infections with bacteremia and all serious local infections: mastoiditis with intracranial complications (*i. e.*, meningitis, sinus thrombosis, etc.), pneumonia and empyema, puerperal sepsis, peritonitis and cellulitis.

Anaerobic Streptococcic Infections: puerperal sepsis.

Pneumococcic Infections of meninges, pleura or endocardium and all cases of sulfonamide-resistant pneumococcic pneumonia.

Gonococcic Infections complicated by arthritis, ophthalmia, endocarditis, peritonitis, epididymitis and cases of sulfonamide-resistant gonorrhea.

Penicillin has also been found to be an effective agent for the treatment of syphilis, actinomycosis and bacterial endocarditis, although its position in such therapy has not been definitely defined. The drug is of questionable value, the report states, for the treatment of mixed infections of the peritoneum and liver in which the predominating organism is of the gram-negative flora, that is, in ruptured appendix, liver abscesses and urinary tract infections. It is also of questionable value in rat-bite fever due to streptobacillus moniliformis.

Contraindications

Penicillin has been found to be ineffective and therefore contraindicated in gram-negative bacillary infections (typhoid, paratyphoid, dysentery, *E. coli, H. influenza, B. proteus, B. pyocyaneous, Br. melitensis*—which causes undulant fever, tularemia, or *B. Friedlander's*), and in tuberculosis, toxoplasmosis, histoplasmosis, acute rheumatic fever, lupus erythematosis diffuse, infectious mononucleosis, pemphigus, Hodgkin's disease, acute and chronic leukemia, ulcerative colitis, coccidiomycosis, malaria, poliomyelitis, blastomycosis, nonspecific iritis and uveitis, moniliasis, virus infections and cancer.

As more extensive clinical experience reveals additional information on indications and contraindications, modifications of the above recommendations will be issued. By restricting therapy to these conditions and to recommended dosage and methods of administration the Office of Civilian Penicillin Distribution expects to obtain maximum value from the limited supply of penicillin.

Penicillin is supplied in powder form in ampuls. In hospital use the contents of the ampul is dissolved in sterile, pyrogen-free, normal saline solution so that the final concentration is 5000 Oxford units per cubic centimeter. The solution is stored aseptically in the icebox and used as needed. Further dilution can be made to meet the particular needs of the physician. A fresh solution should be prepared each day.

The dosage of penicillin varies widely, Dr. Keefer's report points out, but in general 40,000 to 50,000 Oxford units per day is effective, although in some cases the necessary dose may be as high as 120,000 units per day.

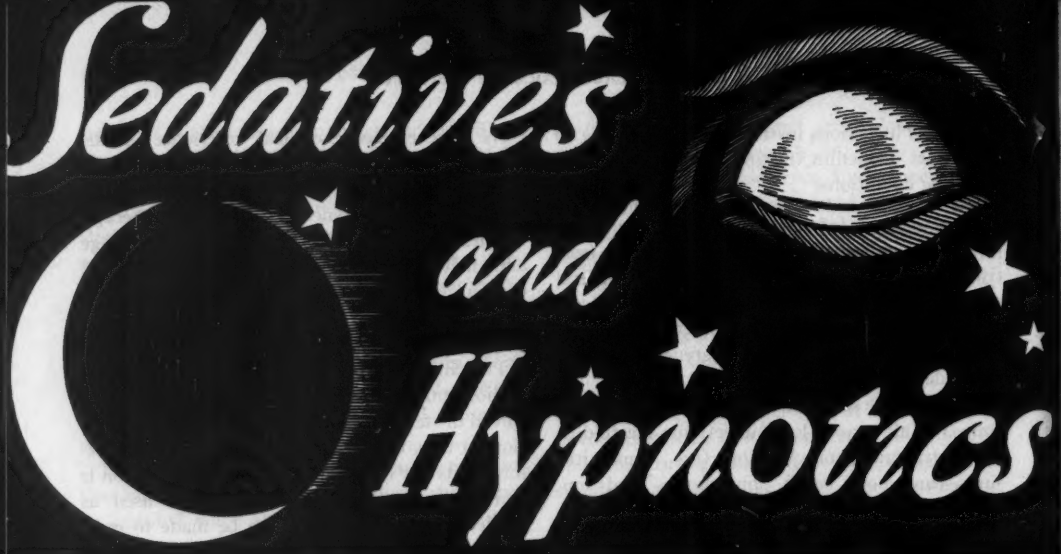
LOANS GIVEN 438 PHARMACY STUDENTS BY GOVERNMENT

Grants totaling $112,697 were given to 438 pharmacy students by the U. S. Office of Education during the fiscal year ending June 30, 1943. This aid was part of $5,000,000 appropriated by Congress for students in certain professions that are considered essential to the war effort. Loans were limited to the fields of engineering, physics, chemistry, medicine (including veterinary), dentistry and pharmacy.

Forty-eight of the nation's 67 pharmacy colleges participated in the plan, receiving an average of $257 per student. The average grant per student in all fields was $265.

The student loan project was undertaken because accelerated educational programs deprive students of their customary summer earnings, making it difficult for some of them to remain in college. Because of rapidly changing conditions arising from the war, however, Congress felt justified in providing only a limited continuation of the student war loans during the 1944 fiscal year. Therefore a reappropriation of the unexpended 1943 balance of slightly more than $2,000,000 was made, and loans are being limited to those students who received loans last year.

Sedatives and Hypnotics



by MELVIN W. GREEN

CHAIRMAN, COMMITTEE ON PHARMACEUTICAL RECIPE BOOK

DRUGS PRODUCING A LOWERED NERVOUS ENERGY LEVEL HAVE WIDE USE, AND PHARMACIST NEEDS ADEQUATE INFORMATION ON THEIR ACTION AND DANGERS

ALTHOUGH sedatives and sleep-producing drugs have been used for centuries, the need for producing sedation and relieving insomnia has increased in recent years due to the increased pressure and nervous haste of modern living. Since drugs used to produce a lowered nervous energy level are obviously potentially dangerous, the pharmacist should be well informed regarding the uses and abuses of drugs in this category. Most of the sedatives produce sleep if a sufficiently high dose is used, bromide being somewhat of an exception. Consequently the difference between sedation and hypnosis is essentially a quantitative difference, for in general it cannot be said that a particular drug is a sedative while another drug is specifically an hypnotic.

The drugs most commonly used for lowering the nervous energy level are: barbiturates, chloral hydrate, paraldehyde, bromides and diphenylhydantoin. Possibly opiates should be added to this list but they will not be discussed at present. Bromides are historically the oldest in this group while the barbiturates and diphenylhydantoin are the youngsters in the series. To a certain extent these drugs are interchangeable in use, but each has a sufficiently specific character to justify its use in preference to the others in particular situations. The pharmacist should know the pharmacological properties and limitations of these drugs well enough to discuss them intelligently with the physician.

Barbiturates and Diphenylhydantoin

Barbital, which is chemically the simplest of the active barbiturates, is also the one first introduced into medicine. Shortly after the introduction of barbital, phenobarbital—in which one of the ethyl groups of barbital has been replaced with a phenyl group—became available. Because of certain advantages which both of these drugs possess, a large number of barbiturates have been prepared by pharmaceutical and organic chemists and several have been made available for therapeutic use.

Most barbiturates are effective as hypnotics, producing a restful sleep which closely resembles natural sleep. In addition, some of the barbiturates are effective general anesthetics.

Barbital is almost completely eliminated by

the kidneys in its original form. Phenobarbital is partially eliminated by the kidneys and partially destroyed by the tissues. Most of the other barbiturates, such as pentobarbital, amytal and seconal, are largely destroyed by the tissues, particularly the liver, and only a small amount is eliminated in the urine. The length of time a barbiturate will produce a depression is therefore largely dependent upon the rate of elimination or destruction of the drug. By chemical methods it can be shown that a single dose of barbital takes several days to be completely eliminated. This accounts for the morning depression or "hangover" after its use. Furthermore, since barbital is eliminated slowly, there is danger of overdepression due to a cumulative action if it is taken at frequent intervals. The same is true of phenobarbital, but to a lesser extent since part of it is destroyed in the tissues. In normal healthy individuals, drugs similar to pentobarbital produce relatively little after-depression because the tissues destroy them fairly rapidly and thus diminish the danger of cumulative action.

Not True Addiction

Although there have been a few cases of alleged habituation to barbiturates reported, most clinicians are said to believe that it is at most a psychological habit and not a physical addiction as in the case of morphine. However, there is little doubt that tolerance does develop. Green and Koppanyi, for example, have shown that a dose of a short-acting barbiturate, which normally causes dogs to sleep for about an hour and fifteen minutes, will cause no sleep whatsoever after a few daily injections. Clinical evidence for this tolerance is also shown by the fact that most barbiturate users ultimately must increase the dosage in order to assure sleep.

Since the barbiturates cause a depression of various centers in the medulla as well as other portions of the central nervous system, an overdosage may cause death from respiratory failure. This has become a fairly frequent method of committing suicide. Faulty elimination and failure of the tissues properly to destroy barbiturates may also permit a cumulative action which may cause death.

Persons who have become somewhat tolerant to barbiturates have frequently been accidental victims of barbiturate poisoning because the customary dose fails to produce sleep, yet produces sufficient mental confusion so that during an attempt to take one or two additional tablets the patient accidentally takes many more tablets. Barbiturate poisoning may be diagnosed with comparative certainty and ease by a chemical determination of the concentration of the drug in the blood or in the urine. The proper antidote is the use of a central stimulant, such as picrotoxin, coramine or metrazol.

From the therapeutic viewpoint the barbiturates are divided into three categories according to the length of action. The long-acting barbiturates, such as barbital, are used where unconsciousness or semiconsciousness is desired for a long time, such as in certain psychotic states. The moderate-acting and short-acting barbiturates are used to assure a normal sleep of about the normal length of time. The ultrashort-acting barbiturates are used primarily as general anesthetics by vein but are sometimes used orally to induce sleep. In the case of insomnia due to restlessness, worry and similar conditions, if sleep can be induced the patient will frequently continue to sleep soundly after the effect of the ultrashort-acting drug has worn off. Many cases of insomnia, however, must be treated more drastically, and a hypnotic that will have an action lasting approximately eight hours will be required by the physician.

Phenobarbital in small doses is also useful in controlling and preventing epileptic seizures. More recently, however, diphenylhydantoin U. S. P. has been used to replace phenobarbital because it prevents or controls seizures without the generalized depression produced by barbiturates. Bleeding of the gums has been seen frequently after long-continued use of diphenylhydantoin and when such occurs the physician will usually wish to stop the medication.

Since the barbiturates possess little analgesic activity they are sometimes combined with analgesics to aid in the relief of pain. The *Pharmaceutical Recipe Book* contains the following formula for Elixir of Aminopyrine and Phenobarbital which may prove to be of interest to the physician desiring this double medication.

Elixir of aminopyrine N. F..... 500 cc.
Elixir of phenobarbital U. S. P., a sufficient quantity,

To make.....1000 cc.

Mix.

Average dose: Metric, 4 cc.— Apothecaries, 1 fluidrachm.

The pharmacist must remember that the use of barbiturates is restricted to physician's prescription since the Federal Food, Drug and Cosmetic Act has designated them dangerous drugs. In addition, many states and local communities have so-called "barbiturate laws" with which the pharmacist should be familiar.

Chloral Hydrate

Chloral hydrate, first made by Liebig in 1832, was introduced into medicine by Liebrich in 1869 and is still used in medicine today. In addition to the sedative and hypnotic action of chloral hydrate, it is also occasionally used externally where its irritant properties are utilized to produce counterirritation. When given internally in doses of 1 to 2 Gm., sedation is produced without preliminary excitement in a comparatively short time; within an hour sleep usually ensues. Although the sleep produced is deep it is not so deep that the patient cannot be readily aroused. Because chloral hydrate does not depress the reflexes it is not very effective as an anticonvulsant.

Chloral hydrate is readily absorbed from the gastro-intestinal tract and is reduced by the body to trichlorethyl alcohol which is conjugated, principally in the liver, with glycuronic acid. The conjugate, which is known as urochloralic acid, is excreted in the urine.

When chloral hydrate is administered in the presence of alcohol, chloral alcoholate is formed. This formerly was considered to be much more toxic than chloral hydrate itself. It has since been shown that chloral alcoholate is not more toxic than the chloral hydrate. However, chloral alcoholate is a liquid that is not miscible with water, and if the product is not well shaken before use an overdose of the chloral alcoholate could easily be dispensed. Consequently, if chloral hydrate is prescribed in the presence of alcohol, the patient should be warned that the bottle must be shaken well just before the drug is administered. Chloral hydrate is frequently prescribed in mixtures and the *Pharmaceutical Recipe Book* contains several formulas for such preparations, notably Syrup of Chloral (from the *British Pharmaceutical Codex*), Lockwood's Solution, Solution of Chloral and Sodium Bromide, Sodium Bromide and Chloral Mixture, and Compound Elixir of Chloral and Potassium Bromide.

Paraldehyde

Paraldehyde is another compound that has long been used medicinally, having been introduced by Cervello in 1882, and it is still considered to be an efficient hypnotic. It is not used as frequently as formerly, largely due to its burning, disagreeable taste. Paraldehyde appears to be one of the most advantageous hypnotics in the treatment of chronic alcoholism.

Paraldehyde is rapidly absorbed from the gastro-intestinal tract and is largely destroyed in the tissues but the portion excreted is eliminated largely by the lungs and to a lesser extent by the kidneys.

Because of difficulty in disguising the taste, physicians are often eager to find a satisfactory vehicle. The *Pharmaceutical Recipe Book* contains the following formula for Elixir of Paraldehyde which succeeds in covering the taste with a fair degree of efficiency because of the judicious use of aromatic substances.

Saccharin	1 Gm.
Oil of bitter orange	8 cc.
Oil of cinnamon	4 cc.
Paraldehyde	240 cc.
Alcohol	500 cc.
Glycerin, a sufficient quantity,	
To make	1000 cc.

Dissolve the saccharin in the alcohol, add the paraldehyde and the oils and then sufficient glycerin to make the product measure 1000 cc. Filter.

Average Dose: Metric, 4 to 12 cc.—Apothecaries, 1 to 3 fluidrachms.

Bromides

Although the element bromine was discovered in 1826, the concept of the bromide ion as a central depressant was slow in developing, but by 1850 was fairly well recognized. In that same year Huette published the first report on bromide intoxication. In 1857 the first recorded use of bromide for controlling epilepsy appeared.

Normally the administration of the bromide ion depresses the central nervous system only to the point of sedation, but occasionally such marked depression as coma may occur. Other tissues in

the body react no differently to the bromide ion than to the chloride ion. Bromides are rapidly absorbed from the gastro-intestinal tract and are distributed throughout the body in a manner similar to the chlorides. Excretion takes place almost wholly through the kidneys. The kidneys, being unable to distinguish between the bromides and the chlorides, appear to function to keep the total halide concentration at a normal value. For this reason bromides are excreted slowly. Under continued bromide medication this ion accumulates in the extracellular fluid until an equilibrium is reached such that the amount of bromide excreted is equivalent to the amount absorbed each day. The lower the chloride intake, the quicker is the accumulation of bromide in the body. Conversely, the administration of large quantities of chloride will hasten the elimination of bromide. On an average, a patient taking 6 Gm. of bromide per day will require about two weeks to reach equilibrium.

Acute bromide poisoning rarely occurs because it is difficult to take sufficient quantities of bromide to elevate the bromide concentration in the blood to the danger point. Chronic bromide poisoning, however, constitutes a real danger. The occurrence of bromide rash, often resembling acne vulgaris, is frequent. The psychotic symptoms of chronic bromide poisoning occur in an alarming number of cases. These mental symptoms imitate many of the symptoms of insanity. Impaired thought, loss of memory and drowsiness often occur, and in the more severe cases delirium, delusions, hallucinations and violent mania may appear. When chronic bromide poisoning is suspected it is comparatively easy to control by stopping the use of the drug, administering chlorides, and forcing fluids to correct any dehydration and assure rapid elimination of the bromide.

Since the concentration of bromide in the blood can be determined with comparative ease by the method of Wuth (*J. Am. Med. Assoc.*, 88: 2013, 1927), the physician may thus check the safety of the continued use of bromide medication.

The dose of bromide is difficult to state in terms of definite quantities since it depends upon the physical condition, the diet, the chloride intake of the patient and other factors. Generally speaking, a daily dose of 3 to 5 Gm. will produce moderate sedation. It must be remembered that a single dose of bromide produces little effect and sedation is brought about only by the repeated administration of the drug. Hence, if rapid sedation is desired, barbiturates, chloral hydrate or paraldehyde are preferred.

Bromides are frequently used in the treatment of epilepsy to reduce both the number and severity of convulsive attacks. The dose for epileptic patients is a sufficient quantity to keep the patient free from attacks without undue discomfort—usually about 1 Gm. three times a day.

Flirting with Danger

Many persons are in the habit of using various nostrums containing bromides and other constituents. When the amount of bromides consumed in a dose is small and the number of doses few and far between, such preparations are probably safe. In most communities, however, there are individuals who make a habit of taking many doses of such preparations every day. The pharmacist who is aware of his public health responsibilities will advise such people that they are flirting with danger and hence may eventually develop distinct bromism.

Many chronic invalids are kept on bromide medication for very long periods of time and are apt to become annoyed and even nauseated by

the taste of the bromide in combination with a vehicle that is repeatedly used. Physicians, consequently, like to change the vehicle for such patients regularly. Although a number of bromide preparations are official there still is need from time to time for other combinations.

The *Pharmaceutical Recipe Book* contains a large number of bromide preparations, such as Triple Bromide Mixture, Brown-Sequard's Sedative Mixture, Solution of Three Bromides, Syrup of Calcium Bromide, Bromide and Hyoscyamus Mixture, Alkaline Mixture of Bromides, and others.

Formerly it was believed that mixtures of bromides should be used on the grounds that a differential rate of absorption of the various salts occurs in relationship to their solubilities. Since it is the bromide ion *per se* that is absorbed, this argument is fallacious and the effectiveness of any individual bromide compound is proportional to the bromide concentration. There probably is no longer any sound therapeutic argument for the use of any salt other than the sodium salt, which is physiologically best tolerated and is the least expensive.

Valerian Compounds

In cases of hysteria, many prominent neurologists believe that valerian compounds are of distinct value. The *Pharmaceutical Recipe Book* contains formulas for combinations of bromide with valerian; Mixture of Bromide and Valerian, Sedative Mixture, and Potassium Bromide Mixture fall into this category.

H. Evert Kendig Named
REMINGTON MEDALIST FOR 1944

WORK LEADING TO FOUNDING OF AN ARMY PHARMACY CORPS AND CONTRIBUTIONS TO EDUCATION ARE CITED AMONG ACHIEVEMENTS OF DEAN OF TEMPLE COLLEGE

THE Committee on Award of the New York branch of the AMERICAN PHARMACEUTICAL ASSOCIATION announces that Dr. H. Evert Kendig has been awarded the 1944 Remington honor medal in recognition of his work leading to the establishment of a Pharmacy Corps in the United States Army and other contributions to American pharmacy.

Dr. Kendig thus becomes the twenty-third Remington medalist, the honor being conferred each year upon the person whose work during the preceding year, or culminating over a period of years, is judged most important to pharmacy. The gold medal, to be conferred at a presentation function in the fall, commemorates the work of Joseph P. Remington, who made many contributions to research and education during the last century but is perhaps best known to the pharmacist as a pharmaceutical editor and writer.

In naming Dr. Kendig to receive the Remington medal, the Committee cited his activities that focused attention on the need for better utilization of pharmaceutical personnel in the armed forces and resulted in the commissioning of pharmacists in the Medical Administrative Corps and later the establishment of a Pharmacy Corps in the United States Army by unanimous vote of both houses of Congress.

For nine years Dr. Kendig served as chairman of the Joint Committee on the Status of Pharmacists in Government Service. Under his guidance much progress was made toward fuller utilization and recognition of pharmacists in the various branches of government, culminating in the

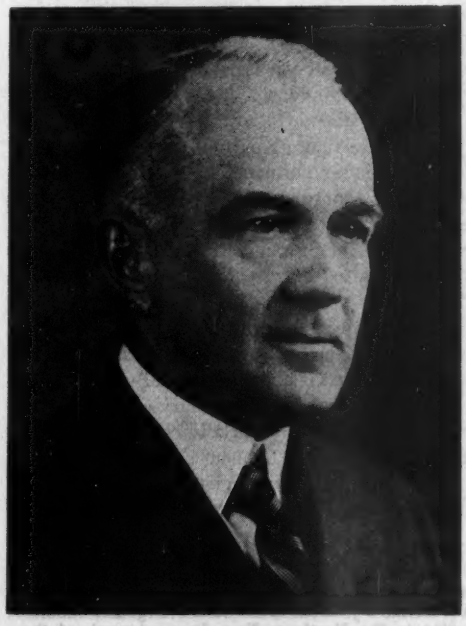
enactment of the Pharmacy Corps legislation even against the opposition of the Army to the change in organization.

"When its full implications and impacts are visualized," the Committee on Award points out, "the successful outcome of the Pharmacy Corps legislative fight deserves to rank among the finest contributions to pharmaceutical betterment."

With this major project completed, Dr. Kendig recently resigned from the Committee because of ill health and the need to devote more time to the educational program of his college but will continue to serve in an advisory capacity.

Dr. Kendig has been active in the AMERICAN PHARMACEUTICAL ASSOCIATION since 1917, having served as president of the Philadelphia branch and at present is its representative to the A. PH. A. House of Delegates. From 1934 to 1943 he was a member of the ASSOCIATION'S Committee on U. S. Pharmacopœia and has been a member of the Committee on Pharmaceutical Recipe Book. He now serves on the Committee on War Activities.

Dr. Kendig's leadership in pharmaceutical education resulted in his election as president of the American Association of Colleges of Pharmacy in 1940. He is a member and one of the founders of the National Pharmacy Scholarship Committee and a member of the board of directors and one of the founders of the American Foundation for Pharmaceutical Education.



H. EVERT KENDIG

Honorary Memberships

The Remington medalist is also an honorary member of various state and local pharmaceutical organizations. He is a member of the board of directors of the Temple University General Alumni Association and is chairman of the University's Council on Defense.

Other memberships include the National Committee on Education and Defense, Union League of Philadelphia, American Association for the Advancement of Science, American Academy of Social and Political Science and the Philadelphia Science and Art Club. In the past he has also been active in the Pennsylvania Academy of Fine Arts, Pennsylvania Historical Society, Philadelphia Geographical Society and the Germantown Historical Society.

Further indicating Dr. Kendig's catholicity of interests is his research in industry and the graphic arts which resulted in patents and processes used for photoengraving, electrotyping and paper and plastics manufacture.

A physician as well as a pharmacist, Dr. Kendig has held teaching posts in both medical and pharmacy schools. Obtaining a Ph.G. from the Medico Chirurgical College of Philadelphia in 1901, he became instructor in pharmacy at the institution, simultaneously studying for his doctorate of medicine.

After practicing medicine in Florida for a time and serving as dean of the Florida College of Pharmacy for a year, the 1944 Remington medalist returned to Philadelphia to assume the chair in pharmacy at Temple University in 1907. He received his doctorate of pharmacy from the University three years later. In addition to duties at the School of Pharmacy, Dr. Kendig served as associate professor of pharmacology at the Temple University School of Medicine (1914–1922) and as professor of pharmacology and toxicology at the Women's Medical College of Pennsylvania (1922–1926). Since 1932 he has been dean of the School of Pharmacy at Temple University in Philadelphia.

Historical Drama Behind

ISOLATION OF MALE SEX HORMONE*

DISCOVERY OF TESTOSTERONE AND ITS THERAPEUTIC VALUE FORESHADOWED IN 1400 B.C.

IF THE difficulties of the discovery of a hormone can be gauged by the time that elapsed between the first presupposition of the occurrence of the hormone in an endocrine gland and its isolation in pure crystalline form, testosterone, the male sex hormone, certainly ranks at the top. The correlation of testicular function and virility was conceived as early as 3335 years before Laqueur, *et al.*, succeeded in isolating testosterone from testicles in 1935. It was Susruta of India in his *Ayurveda*, written about 1400 B.C., who recommended the use of testes in impotence.

The effects of castration of the rooster are well known today, but it is amazing to see how clearly Aristotle, in his *Historia Animalium*, described these changes in both birds and men as early as 300 B.C.

It is hardly surprising that the ingestion of testicles as a remedy for impotence or even as an aphrodisiac has been practiced throughout the ages, no matter how disappointing the results have been. It has even been related that the Empress Messalina fed testes to young men of Rome to increase their potency.

No scientific experiments were made before 1849 when Berthold demonstrated that the implantation of a testicle into a rooster following its castration prevented it from assuming the behavior of a capon.

It did not matter where the testicles were implanted, whether in their natural location or on the intestines. The combs and wattles of these capons failed to shrink. The birds kept fighting with other roosters, behaved like roosters toward chickens, and kept crowing.

However, these basic experiments of Berthold received little attention because they were published in a small journal which had no more than 200 subscribers.

Forty years later, on June 1, 1889, Brown-Sequard, at the age of 72, reported to the French Society of Biology about the injections of testicular extracts he had given himself and how they made him regain strength and overcome the excessive fatigability that had come to him as he advanced in years. There is hardly any doubt now that these observations were wrong and wishful thinking, but his experiments, crude as they were, may be considered as the first attempt at preparing an injectable extract.

In 1911 Pézard prepared an extract from testes which caused growth of atrophic capon combs. More potent testicular extracts were made in 1927 by McGee and used in the same inaccurate capon comb test.

Two years later, in 1929, Gallagher and Koch improved McGee's method of purification and obtained a product of which a daily dose of as little as 10–30 γ sufficed to give the capon comb reaction. These investigators, however, considered their product still to be grossly impure. During the following year, they improved the capon comb test and made it an accurate method of assay of androgens.

In the meantime Laqueur and his collaborators had done considerable research in an attempt at isolating the male sex hormone from testes and reported in 1930 the isolation of a crystalline, though still impure, material of which only 8 γ contained a Capon Comb Unit (C.C.U.).

Other investigators participated in the search for the male sex hormone, and since it had been discovered that male urine concentrates would elicit equally the capon comb response, this more easily accessible raw material was used by most participants in the race for the then imminent discovery.

Indeed, during the next year—1931—Butenandt isolated the pure crystalline androgen from urine and called it androsterone. Butenandt reported that only 1 γ was necessary to produce the capon comb growth which is characteristic for 1 C.C.U. It seemed Laqueur had lost the race.

But Laqueur did not give up. In the first place, he found that Butenandt's assay was er-

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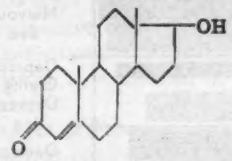
*** Adapted by Ann Lerner of the College of Pharmacy, Rutgers University, from a paper presented by Dr. Bernard J. Brent of the Roche-Organon Laboratories to the Northern New Jersey branch of the American Pharmaceutical Association at the college.**

roneous. Androsterone was 100 times less potent than Butenandt had claimed and since Laqueur's crystals of 1930 were more active than 100% pure androsterone, he concluded that the testes must contain another and more potent hormone than androsterone.

Secondly, he observed that his testicular extracts stimulated the growth of the sex tract of rats in which these organs had undergone atrophy following castration. Androsterone had little if any effect on the genitals.

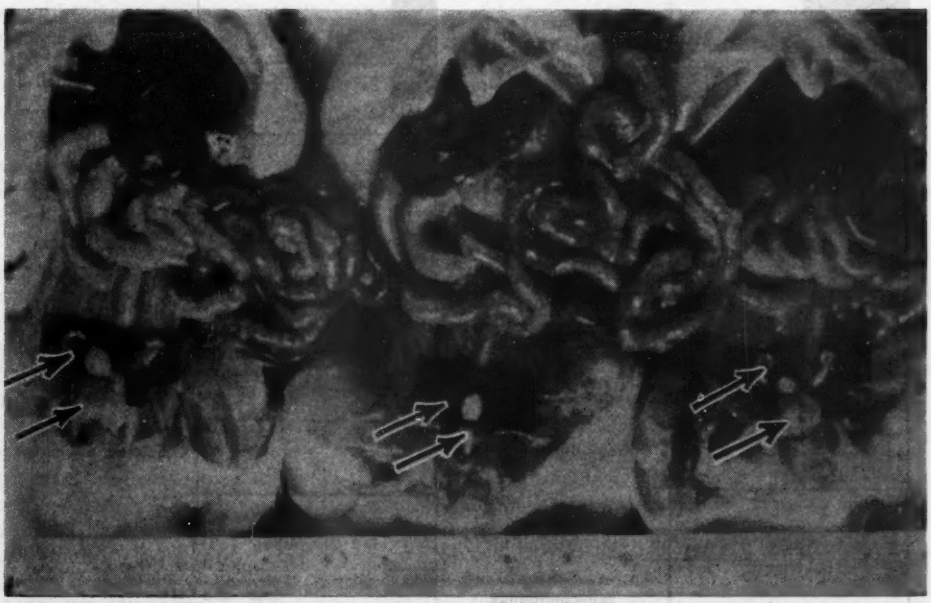
In 1935 Laqueur succeeded in isolating 15 mg. of a pure crystalline hormone from an extract of several tons of bulls' testes. He named this crystalline hormone "testosterone," and it later proved to possess all the expected properties of the male sex hormone.

However, the structural formula was still unknown. The results of chemical investigation were highly contradictory. Laqueur sent what was left of his 15 mg. of testosterone crystals to Dr. Bernard J. Brent, scientific director of the Roche-Organon Laboratories in Nutley, N. J., and asked him to try to obtain the structural formula. Dr. Brent succeeded in obtaining the following structural formula:



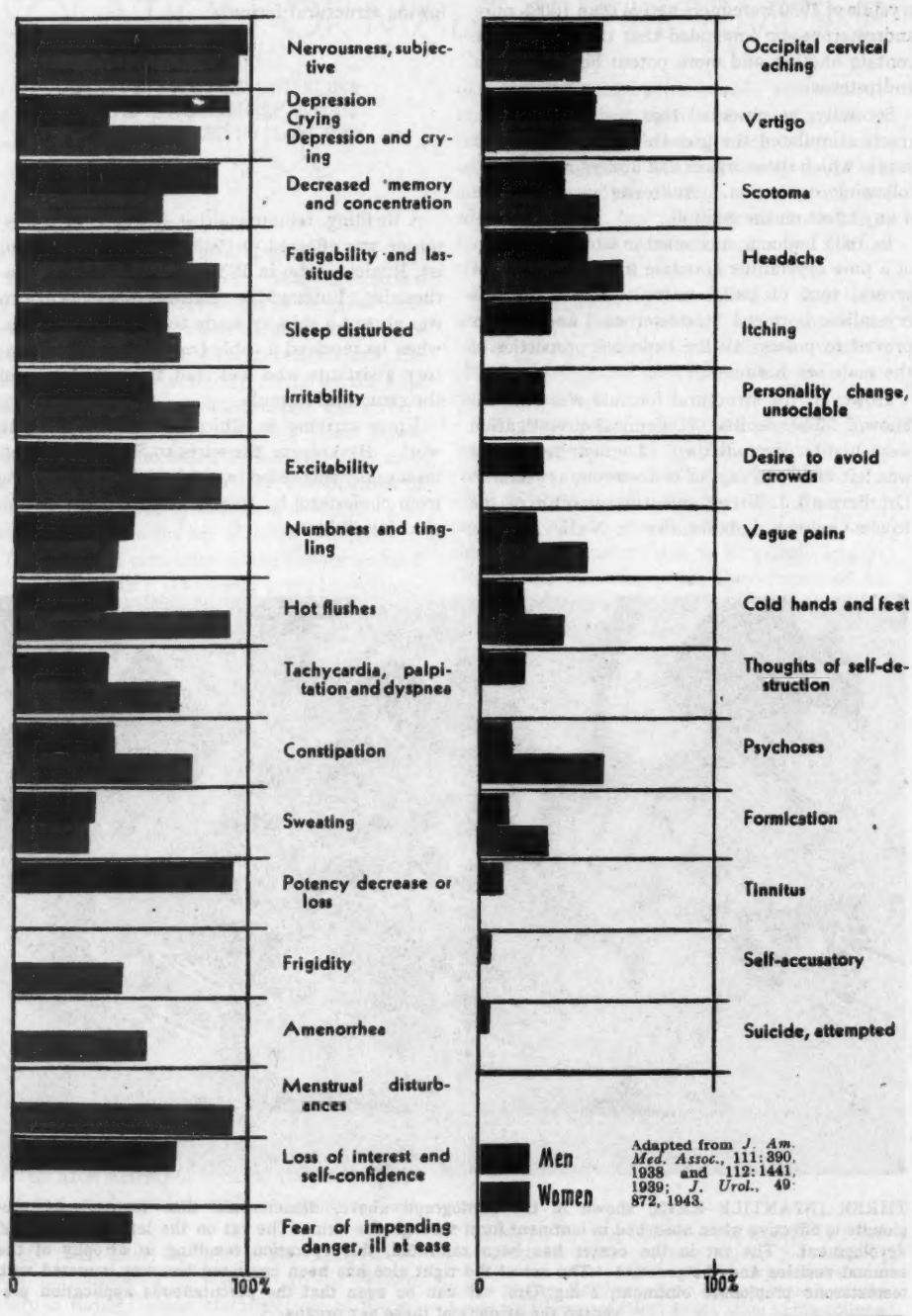
A thrilling, remote-control synthesis of testosterone was effected in 1935 by the Swiss chemist, Ruzicka, who in 1934 had succeeded in synthesizing Butenandt's androsterone. Ruzicka was aboard a ship, en route to the United States, when he received a cable from one of his laboratory assistants who had read the publication of the structural formula.

Upon arriving in Chicago, Ruzicka went to work. By keeping the wires to Switzerland hot, he actually succeeded in synthesizing testosterone from cholesterol by remote control while still in the United States.



THREE INFANTILE RATS, shown in the photograph above, demonstrate that testosterone propionate is effective when absorbed in ointment form through the skin. The rat on the left shows normal development. The rat in the center has been castrated, this operation resulting in atrophy of the seminal vesicles and the prostate. The rat at the right also has been castrated but was inuncted with testosterone propionate ointment, 2 mg./Gm. It can be seen that the percutaneous application prevented the atrophy of these sex organs.

OCCURRENCE OF SYMPTOMS IN MALE AND FEMALE CLIMACTERIC



Adapted from *J. Am. Med. Assoc.*, 111:390, 1938 and 112:1441, 1939; *J. Urol.*, 49:872, 1943.

Here ended the long history of the discovery and synthesis of the hormone. Biological and clinical trials followed. When these proved to be successful, large scale production was started. Thus testosterone became available to relieve the suffering of those whose testes were unable to produce this hormone at all or in adequate quantities, for example in eunuchism, eunuchoidism, and functional impotence.

Male Climacteric

During the following years it became evident that not only women undergo a change in life when their gonadal functions wane, but men experience a similar condition: the so-called male climacteric. This condition had escaped recognition as a syndrome because it lacks so overt a sign as the cessation of menstruation in the woman. However, its symptoms are comparable to those in the female both in character and in frequency, as the chart on page 176 indicates.

While women reach this period of life at the average age of 40.8 years, the onset of the climacteric in the male occurs at about 48 to 52 years of age. In this indication, testosterone propionate relieves the hot flushes, depressions, fatigability, irritability, lack of ability to concentrate and work and restores the feeling of well-being.

Besides the major indications for testosterone propionate therapy, there are others which are of recent date and still not fully established. These include cryptorchidism, benign prostatic hypertrophy, angina pectoris, and stunted growth.

It may sound illogical that the male hormone has also found its application in the female, but its rationale lies in the fact that testosterone propionate exerts an inhibiting effect upon ovarian activity. Since we know that certain cases of hypermenorrhea are caused by excessive ovarian activity resulting in a hypersecretion of the female sex hormones, it is not surprising that testosterone propionate counteracts their effects and controls the excessive bleeding. In this therapy, however, it is necessary to guard against masculinizing effects of the male hormone, which may result in beard growth, change of voice, etc. However, such effects can be avoided by limiting the monthly dose to 300 mg. or less.

Testosterone propionate has also proved highly effective in inhibiting lactation following stillbirths or when breast feeding is undesirable.

Comparatively soon after the establishment of the effectiveness of testosterone propionate injections in functional impotence, the administration of the male sex hormone by mouth was investigated. The results were discouraging since from 20 to 50 times higher doses were required orally for comparable effects, thus making this route of administration uneconomical. Apparently testosterone is inactivated in the gastrointestinal tract.

The subsequent development of a testosterone derivative, methyl testosterone, which seems to be protected against such inactivation, was greatly welcomed. Methyl testosterone tablets can replace injections of testosterone propionate in all but the most severe indications. Only 3 to 4 times the injected dose of testosterone propionate has to be taken by mouth in the form of methyl testosterone tablets. This same compound is effectively absorbed through the skin upon inunction in ointment form.

Investigations are under way in various laboratories to explore the possibilities of further extending the usefulness of testosterone compounds.

TOO MUCH STILBESTROL MAY PRODUCE UTERINE BLEEDING

Highly estrogenic, nonhormonal diethylstilbestrol is coming into wide use for the effective treatment of troublesome menopausal symptoms. As a result of indiscriminate and excessive dosage for this purpose, many cases of postmenopausal uterine bleeding have been caused, which is disconcerting to the patient and often leads the physician erroneously to suspect cancer of the uterus.

Estrogenic therapy should therefore be limited to controlling accentuated menopausal symptoms until the hormonal equilibrium has become readjusted, Dr. Emil Novak of Baltimore reports (*J. Am. Med. Assoc.*, 125: 98, 1944). Dosage of diethylstilbestrol, except in rare cases, should be within the daily extremes of 0.1 mg. to 0.5 mg.; prophylactic use is considered illogical.

Chief precautions in holding undesirable bleeding to a minimum are: (1) avoid use of diethylstilbestrol or other estrogen unless symptoms are clearly menopausal and constitute a problem to the patient, (2) avoid prophylactic therapy; (3) avoid unnecessarily large doses and (4) avoid routine dosage for indefinite periods, using the drug only as needed.

To See Ourselves

AS THE LAYMAN SEES PHARMACY

by SIMON E. SOBELOFF†

VIEW FROM OPPOSITE SIDE OF DISPENSING COUNTER REVEALS POSSIBLE NEED FOR CHANGES

THE course of instruction in pharmacy is four years—the same as in most schools of medicine, longer than in most schools of law—and there is a movement in certain pharmacy schools to extend the period of formal instruction to five years. There has been steady advance in the standards of pharmaceutical education. The broad range of studies in the sciences of physics and chemistry, botany, bacteriology, pharmacology, physiology, biology and zoology indicates that graduates in pharmacy are trained for the practice of a learned profession. Thoughtful persons have, therefore, raised the question as to whether much of this carefully educated talent is not being wasted when, as has been shown by surveys, only 32% to 50% of the average pharmacist's time is devoted to pharmaceutical work, and the balance of his time to merchandising activities unrelated to his profession.

What is the purpose, these persons ask, of training a man carefully and at great expense of time and money to equip him for a specialized branch of the practice of medicine—for that is what pharmacy really is—only to have him spend up to two thirds of his time in ordinary commerce where his skill is not needed? It seems a tragic waste for a man to ground himself in the medical and related sciences and then to become immersed in the operation of a sandwich counter, the dispensing of ice cream sodas, the sale of stationery and school supplies and even such articles as umbrellas, wallpaper, lingerie and haberdashery. How much of a scholarly background does one need to match a woman's cosmetics to her personality, or to fit her into the right size beach chair?

From one point of view, it may seem to be a matter of little consequence to the public whether the man who compounds prescriptions and sells pharmaceuticals also deals in articles of general merchandise; it may even appear to serve public convenience to be able to buy pharmaceuticals and other things in the same place. But a little reflection will make it clear that for the pharmacists particularly, and for the public, too, in the long run, this practice holds certain dangers.

"Where a man's treasure is, there is his heart also." If a man earns his livelihood practicing a profession, he maintains his interest in it; he gives thought to its problems; he feels encouraged to keep abreast of the developments in his chosen calling; he continues his professional growth. In short, his professional pride is sustained and his professional morale is high. This leads to a loftier sense of his responsibilities and a deeper desire to meet his obligations.

If compounding prescriptions and selling pharmaceuticals becomes a side line with him, he would be an unusual man, indeed, if his professional instincts were not dulled, and if his professional interest were not in the course of time submerged by the pressure of his nonprofessional commercial pursuits. It seems clear that both the profession and the public suffer by the deprofessionalization of pharmaceutical practice. Yet, in saying this, I realize that the problem is largely economic. It will not be solved by mere exhortation, for graduates in pharmacy and other persons of learning, culture and professional training are not unlike the generality of mankind in their desire to eat, to clothe themselves, to support their families, and to enjoy the comforts of life. They cannot, therefore, disregard the economic factors which have brought present conditions into being. Nor would it be feasible for drugstores at one fell swoop to forego handling general articles,when department stores, groceries and even roadside garages handle drugs.

While schools of pharmacy have not graduated annually for the past seven or eight years more than the number needed to replace those who die, retire or change their occupation, nevertheless we

† City solicitor of Baltimore, Md. Condensed from an address delivered at the April, 1944, commencement of the School of Pharmacy, University of Maryland.

had in 1940, as shown by the United States Census Report, approximately one pharmacy or drugstore for every 1957 persons in Baltimore, and one for every 4276 persons in the counties of Maryland. It has been said that one pharmacy to every 5000 of the population could adequately supply its pharmaceutical needs. If so, we have over two times as many pharmacies as are required in Baltimore. The average ratio of pharmacies to population in the entire United States is approximately one to every 2270 persons. In Italy there is only one to every 4000. Other European countries show even smaller ratios, and in Sweden they have only one pharmacy for every 15,000 persons.

Conditions, of course, vary from place to place, and there may be particular explanations in this or that country with which I am not familiar. But it must be obvious that the only way in which Baltimore's 439 pharmacies manage to survive is by combining general commercial activities with their purely professional work, whereas in European countries the pharmacy or chemist's shop is what its name implies, and not a department store. If, as I believe, and as many who are more competent than I to express an opinion also believe, it is desirable to encourage members of the profession to concentrate increasingly upon the practice of the calling for which they have prepared themselves, then consideration must be given to the following measures. I do not propose them as specifics; I merely offer them from the viewpoint of a layman to stimulate thought and study.

Select Students

First, the profession should not be further overcrowded. The number of graduates should be gradually restricted. This process can be utilized as an opportunity to raise admission requirements and to elevate scholastic standards. Indeed, the number of pharmacy schools strikes me as fantastic. There seems to be no need for 68 of them in this country. Why should each state have one or more centers for the propagation of pharmacists? I make so bold as to suggest that the American Association of Colleges of Pharmacy could render a service by devising some means of gradually reducing this number. There are in the United States 77 medical colleges and 183 law schools, which seems more than enough to supply the need. At least it may be argued that state legal systems differ, and this tends to encourage law schools in each state; but the practice of pharmacy is substantially the same throughout the nation and it is difficult to perceive the need for so many colleges of pharmacy.

Freedom of Choice

Second, even with the present number of practitioners and the existing system of the combined pharmacy and general merchandise store, a limited freedom of choice is still possible to the man with a strong inclination toward the professional ideal. That freedom of choice will be enlarged as time goes on—as and if the number of graduates is lessened. In the meantime, a pharmacist may feel compelled to compromise with economic necessity by taking into his pharmacy certain foreign articles; but, at least in the conduct of his pharmacy, he need not emphasize this type of business to the neglect of his pharmaceutical and prescription work. There is still a substantial opportunity in true pharmaceutical practice. Last year approximately 5,300,000 prescriptions were filled in Maryland, an average of 8400 per store. Prescriptions, there is no room to doubt, will be attracted to the pharmacist who by his physical equipment, cleanliness, conscientious accuracy, and general professional atmosphere merits such confidence.

And when an establishment gains in prestige as a pharmacy, it will be able increasingly to discard its soda fountain, its candy and stationery counter—yes, perhaps even its pin-ball machine. The pharmacist can then forego the easy money—if it is easy money—from such enterprises. Let those without professional skill and competence have them, and welcome. Only in this way will the pharmacist come to be recognized as a professional rather than a business man. Let the pharmacist, instead, specialize in the sale of chemical products, where his scientific knowledge will aid him.

Besides the multitude of medicines and curative agents, there is a vast field for pharmacists in the manufacture and sale of insecticides, fumigants, disinfectants; and there is an opportunity for laboratory work, especially in the country towns, but also in the city, for clinical testing, blood and sputum analyses, etc. Physicians who now send such work to hospital laboratories would readily refer it to the pharmacist

located in the same neighborhood as the patient, if the pharmacy were appropriately conducted and showed an interest in such work. Overburdened hospital laboratories would welcome the relief, and pharmacists would be more completely fulfilling the function for which they were scientifically trained. The undertaking of such professional activities by pharmacists would compensate them for the loss of profits from the sale of banana splits, shoe laces and detective thrillers, and it would elevate their professional pride and prestige in the community.

Varied Opportunity

And, of course, the retail drugstore is not the only opportunity that is offered the man trained in pharmacy. One has but to recall that Pasteur was a member of your profession to get a glimpse of the limitless possibilities that await persons with training in pharmacy and the related sciences. Vast research organizations, both publicly endowed and in private industries, which perform a service of the first magnitude are constantly on the lookout for men and women of scientific training and alert minds. The need of private industry for experts possessing such qualifications is ever expanding.

But freedom from the commercialism of ordinary trade is only one of the means of preserving and enhancing the professional status of pharmacy. No less important is the pattern of the pharmacist's general life as a citizen. Especially the neighborhood pharmacist is to a peculiar degree exposed to public scrutiny. More than the doctor, or lawyer, or dentist, perhaps more than the minister, the pharmacist is constantly, and utterly without formality, consulted at all hours every day, not only on matters pertaining to his profession, but relating to public health; to political, patriotic and civic movements; to private economic, personal and domestic problems. He is most accessible and, hence, first called upon when first aid is needed; and even when the pharmacist is removing a cinder from a neighbor's eye or helping a mother select the best talcum for her baby, he is the friend, guide and confidant who hears and helps solve a great variety of personal problems that defy exact classification but loom large in the troubled minds of his appreciative patrons. Such services, modest as they may seem, cannot be performed by an untrained store keeper. Frequently unrequited, save by sheer gratitude, this is the stuff of which the texture of his community position and stature is woven.

College training is but the prelude; success in the career you have chosen rests upon the same virtues and attributes which experience has found necessary to success in every vocation. Among these are honesty, intelligence, industry, skill, reliability, cleanliness, orderliness, and not least the pursuit of general culture—which is the capacity to enjoy the beauties of life—and loyalty to his fellows, and full participation in the duties of citizenship. A successful professional man cannot confine himself to his profession to the exclusion of those interests which concern every man. He must not bring upon himself the reproach expressed by an unknown author who said, "A professor of Greek is one who knows a little Greek and nothing else." The Roman writer, Terence, wisely declared: "I am a man, and nothing human is foreign to me." George Elliott said: "The best augury of a man's success in his profession is that he thinks it the finest in the world." Let me amend this by saying: "The best augury of a man's success in his profession is that he is willing to make it the finest in the world."

CERTIFIED PRESCRIPTIONS ARE REQUIRED FOR QUINIDINE USE

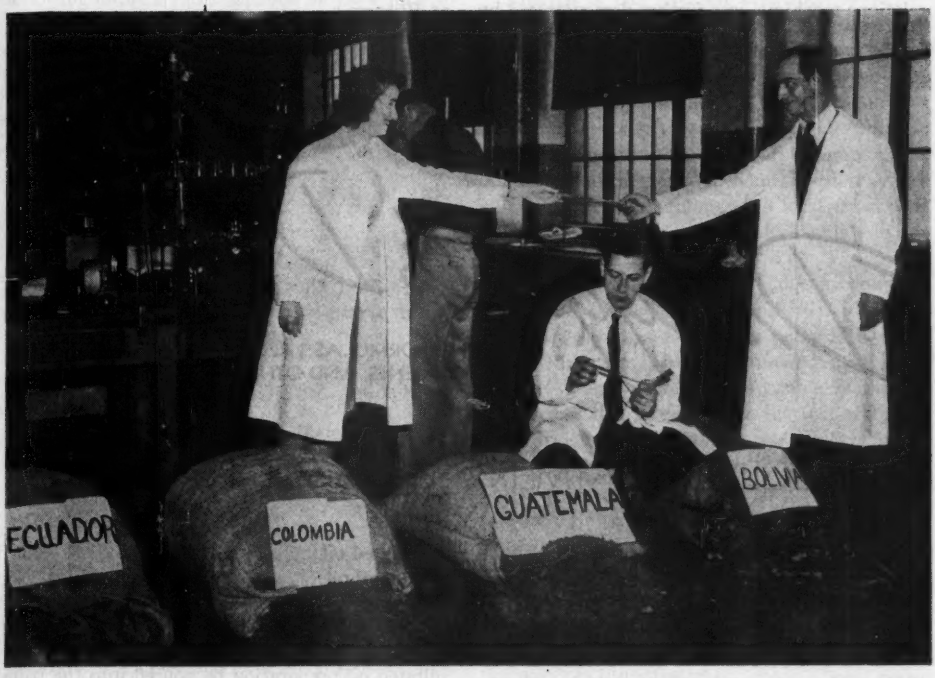
Quinidine can no longer be dispensed except on prescription, and then only if the physician certifies that it is for cardiac disorders or notes that it is used "pursuant to War Production Board Order M-131, paragraph (e)." Quantities on each prescription are limited to 50 three-grain tablets or capsules or the equivalent of 150 grains of quinidine in other dosage forms. A prescription cannot be refilled.

Tightened restrictions on the dispensing of this cinchona alkaloid were necessary because of the "critical condition" of supplies, the War Production Board announced.

Under the revised order, two ounces or less of quinidine may be purchased without WPB authorization if the purchase will not bring the pharmacist's stock above four ounces of quinidine or its equivalent in other dosage forms. A certificate of purchase stating the intended use is required for quinidine, however, as well as for the purchase of the other cinchona alkaloids.

A. Ph. A. Branch Sponsors

PHARMACY EXHIBIT AT RUTGERS



SAMPLES of South American cinchona bark are shown above being examined by members of the A. Ph. A. student branch at Rutgers University College of Pharmacy during Science Day, an open-house exhibition sponsored by the student branch. The bark is being used in a research project at the College on assay procedures for quinine and other cinchona alkaloids.

The success of Science Day, largely staged by the students themselves, emphasizes the value of such a program to pharmacy colleges in acquainting the public with the professional and scientific training of the modern pharmacist. Miss Ann Lerner of the Rutgers College reports that "more than a thousand persons from New Jersey and New York saw the exhibit, and many of them seemed to be impressed for the first time with the complete scientific background which a pharmacist must have. Too many of them were prepared to view an exhibit covering proper procedure in wrapping packages and arranging displays."

Instead, demonstrations in each department of the College showed the relationship of pharmacy to public health and illustrated the basic scientific principles used in modern living.

In the pharmacy department, prescriptions were compounded and preparations manufactured. Newer drugs, such as the sulfonamides and penicillin were displayed. Visitors received samples of cold creams, hand lotions and mouth washes.

In the department of biological sciences, the visitors peered into microscopes to see pathologic organisms, and viewed specimens of parasites and anatomic models. Biological tests were conducted. On display were botanical drugs from all parts of the world. At hourly intervals sound motion pictures were shown.

The chemistry department had exhibits demonstrating chemical principles used in pharmaceutical manufacturing. Organic drugs, such as aspirin and acetone, were prepared in the laboratory. Demonstrations in the physics department

emphasized the techniques required for the use of physical apparatus in testing medicinal substances and the fundamental physical principles which form the basis of scientific procedure.

The importance of the exhibition as a public relations technique was further demonstrated by the feature articles which appeared in the local press and the hundreds of inquiries concerning pharmacy subsequently received at the College office. College officials report that the results justify making Science Day an annual event at Rutgers.

Druggists' Digest

OF NEW FORMULAS, RECENT PHARMACEUTICAL DEVELOPMENTS, AND OTHER PROFESSIONAL DATA

EFFECTIVE TREATMENT FOR ACNE REPORTED

Successful treatment of common acne by a routine involving the use of sulfated oil as a cleanser, plus "shake lotions" in some cases, is reported by Drs. Jacob H. Swartz and Irvin H. Blank of Boston (*J. Am. Med. Assoc.*, 125: 30, 1944). The cause and cure of acne has always been somewhat of a puzzle but it is a well-accepted principle of treatment that the oily secretions of the overactive, inflamed sebaceous glands should be removed.

Sulfated oils, formerly known as sulfonated oils, mix well with both oil and water and are efficient emulsifiers. It is therefore believed that they cleanse the skin by emulsifying the oils so that the oils can be easily removed by rinsing with water. Sulfated oils produce no lather, which should be pointed out to patients for whom they are prescribed.

Depending on the nature of the lesions, acne vulgaris is divided into three types: juvenile, papulopustular and indurated. The following routine is recommended for all types:

1. Cleanse the affected parts three times daily with sulfated oil. The preparation[1] prescribed by Drs. Swartz and Blank consists of:

Sulfated oil	25
Mineral oil	25
Water	50

It is recommended that a small amount of the sulfated oil preparation be poured into the palm of the left hand and then thoroughly rubbed over the unmoistened skin of the face with the fingers of the right hand. After massaging for from one to several minutes, the face is rinsed thoroughly with warm water. As the skin becomes less oily with continued treatment, the frequency of application may be decreased.

2. Each cleansing is followed by an application of borated alcohol prepared as follows.

Aq. boric acid solu., saturated	50
Ethyl alcohol, 70%	50

3. Remove comedones as instructed by the physician with a comedo extractor which has been sterilized by boiling. Comedones usually need to be removed only twice a week. The operation should be preceded by the application of sulfated oil and borated alcohol, then followed by another application of borated alcohol.

4. Chocolate, nuts and cooked fats are eliminated from the patient's diet.

[1] Available as Acidolate from National Oil Products Co., First and Essex Sts., Harrison, N. J.

This routine usually produces a satisfactory response in the juvenile type of acne. For the papulopustu'ar type, ultraviolet irradiation and the nightly use of a "shake lotion" are often prescribed in addition to the above routine. The following lotion is recommended for patients who have light complexions and whose skin is not very oily:

	Gm. or cc.
Calamine	4
Zinc oxide	8
Phenol	2
Glycerin	8
Spirit of camphor	4
Distilled water, *q. s. ad*	240

For dark-complexioned patients with a very oily skin, pharmacists can prepare a more drying lotion for physicians as follows:

	Gm. or cc.
Calamine	2
Zinc oxide	4
Phenol	1
Spirit of camphor	8
Precipitated sulfur	8
Alcohol	120
Distilled water, *q. s. ad*	240

For the indurated type of acne, roentgen therapy is often used, the physicians report, especially when patients have not responded well to the other types of therapy. This treatment is followed by application of sulfated oil and the first lotion mentioned above.

SULFA POWDER IN VASELINE OR OIL PREFERRED FOR BURNS

The three most satisfactory individual substances for treating burns are sulfanilamide powder, cod liver oil and vaseline, in the opinion of Lt. Col. Arthur E. Porritt of the British medical corps after experience in a base hospital in the Middle East.

Application of tannic acid or its preparations, while the patient is still in forward battle areas, is considered unsatisfactory. Meticulous surgical toilet and full anesthetic facilities are essential, according to Col. Porritt, if any success is to be obtained from tanning methods for war burns. Even then, vaseline and sulfanilamide are considered the drugs of choice.

Trials of combinations of the three preferred drugs revealed that a suspension of sulfanilamide powder in cod liver oil was best, both for comfort and rapid healing, with the powder in vaseline a good second.

Supplies of cod liver oil were soon exhausted and equally good results were then obtained with olive oil, cotton seed oil, red palm oil and peanut oil. The empirical conclusion reached by Col. Porritt (*Military Surgeon*, 94:227, 1944) is that the usefulness of cod liver oil is due to its physical properties rather than a local vitamin effect. An oily vehicle gives an even diffusion of the sulfanilamide and prolongs the local effect, but assures a nontoxic level of sulfanilamide in the blood.

A series of cases treated at Tobruk confirmed the value of the vaseline-sulfanilamide combination. First, a meticulous and gentle toilet of the burns was carried out under general anesthesia. Then, wherever comparable burns had occurred, a 10% silver nitrate tan (edges treated after drying with triple dye) was applied to one and sulfanilamide in vaseline to the other. The limbs were encased in a light, padded, split plaster. Results showed that the burned areas treated with vaseline and sulfanilamide healed ten to fourteen days sooner than corresponding tanned areas. The oily dressing was much more comfortable to the patients and the residual new skin was better from a nutritional standpoint in the patients thus treated.

FORMULA SHOWS PROMISE AS AN EFFECTIVE FUNGICIDE

Although many chemicals have been tried for the treatment of "athlete's foot," few mercuriated compounds have been investigated for this purpose, probably due to the danger of mercury poisoning. Since mercuriated derivatives of carvacrol have been shown to retain their phenolic character, yet contain a rather high percentage of mercury, Dr. Carl E. Georgi of the University of Nebraska set out to determine what effect monochlormercuricarvacrol would have on pathogenic fungi *in vitro*.

Epidermophyton, Trichophyton, Monilia and Staphylococcus aureus were included in the tests; the particular species used were considered representative of those encountered in fungous infections of the skin. Observations were made on the penetration of various prepa-

rations through an agar substrate simulating body tissue, and their activity was also observed in the presence of blood serum.

The four principal preparations tested were (1) monochlormercuricarvacrol in a fatty base, (2) Ointment of Benzoic and Salicylic Acid, N. F., (3) salicylic acid, benzoic acid and thymol in a hydrophilic base and (4) monochlormercuricarvacrol, salicylic acid and benzoic acid in a hydrophilic base.

By far the most effective, based on the zones of inhibition reported (*Arch. Derm. Syph.*, 48:497, 1943), was the last formula,[1] which can be prepared as follows:

Monochlormercuricarvacrol	1.5
Salicylic acid	3
Benzoic acid	6
Soluble base, *q. s. ad*	100

The recommended base consists of.

Glycerin monostearate	10
Glycerin	20
Bentonite	2
Water	68

ERGOTAMINE MAY ALLEVIATE BATTLE REACTION SYNDROME

Ergotamine tartrate has proved effective in preliminary tests for the treatment of "battle reaction" and may eventually prove helpful in banishing excessive fears in civilians when due to overactivity of the sympathetic nervous system.

Patients treated did not have the complicated autonomic unbalance of war neurosis. Unlike the true neurotic, they had adjusted satisfactorily to combat conditions but were subjected to a battle experience that proved overwhelming. The resulting fear reaction stimulated the sympathetic nervous system to increase production of epinephrine. This resulted in physical symptoms and increased sensitiveness to stimuli. Mild stimuli then led to the secretion of still more epinephrine, and the symptoms themselves produced fear, thus causing a cycle.

Believing that autonomic drugs might break up this cycle more directly than sedatives, Drs. Robert G. Heath and Florence Powdermaker of the U. S. Public Health Service administered ergotamine tartrate to 20 typical patients. The usual oral dosage was 3 mg. as the initial dose followed by 2 mg. every three hours for ten days. No untoward reactions were observed. Use of the drug is contraindicated in liver insufficiency and certain circulatory diseases.

As the treatment did not appear to interfere with motor coördination or to slow down mental processes, the physicians suggest (*J. Am. Med. Assoc.*, 125:111, 1944) that its use might be considered as a prophylactic to lessen excessive anxiety, such as occurs under combat conditions. Ergotamine tartrate was ineffective for treating ordinary psychoneurosis.

Although uncontrollable factors in the experiment make it difficult to evaluate the drug as a remedy for "battle reactions," the physicians obtained what "seemed to be convincing results."

PHARMACISTS DISCOVER NEW ANTIBIOTIC IN COMMON ALGA

An antibacterial substance that is effective against both gram-positive and gram-negative organisms has been extracted from the common fresh-water alga, Chlorella, by members of the Pharmacy College staff at the University of California working in coöperation with the Division of Plant Biology of the Carnegie Institution of Washington

The pharmacists and their collaborators suggest (*Science*, 99:352, 1944) that this newest antibiotic substance produced by a lower representative of the plant kingdom be called chlorellin. A crude extract of the material, occurring as a brown mass, was obtained by extraction of the cell-freed cultures with an organic solvent, such as chloroform or benzene. Aqueous solutions of the crude extract, containing about 0.03 to 0.1 mg. solids per cc., were then used for the experiments.

Only low and variable yields have been obtained during the past year and a half of research. Further experiments are now under way to learn the optimum conditions for the production and extraction of chlorellin and to determine the full range of its activity and the chemical nature of the active principle.

Unlike penicillin and similar antibiotic substances, chlorellin is autotrophic, thus requiring no expensive and troublesome organic culture media. All the alga needs for growth is an aqueous solution of mineral salts and carbon dioxide.

[1] Available as Monarden (trademark applied for) from Smith-Dorsey Company, Lincoln, Neb. Monochlormercuricarvacrol also supplied by Smith-Dorsey.

In vitro tests show that chlorellin has a high inhibitory action against such organisms as *Staph. aureus, Str. pyogenes, B. subtilis, B. coli* and *P. pyocyanea*. The experiments indicate that chlorellin may have the added advantage of being bactericidal as well as bacteriostatic.

SULFA DRUGS MAY SENSITIZE THIRD OF PERSONS TREATED

Warning against the use of sulfonamide ointments, powders, sprays and medicated bandages, Dr. David Bloom of New York emphasized to the meeting of the Society of Dermato-Syphilologists that "an enormous number of cutaneous reactions" are resulting from such treatment of trivial superficial infections and injuries of the skin.

Although topical application apparently produces only a sensitization of the skin, this in itself can be serious and has sometimes resulted in death. The sulfonamides, administered either orally or topically, have the unusual ability to sensitize more than a third of persons who take them, Dr. Bloom claimed. If used when a sulfa drug is not clearly indicated, the patient may thus be unable to take a sulfonamide when serious illness develops.

To help guard the public against this danger, Dr. Bloom urged legislation prohibiting pharmacists from dispensing sulfonamide preparations for external use except when authorized by a physician and suggested that an educational program for the laity be undertaken to make known the dangers of indiscriminate use of the sulfonamides.

U. S. P. REPLACES LACTOSE

The seventh Sheet Supplement to the U. S. P. became effective June 1, authorizing the permissive replacement of lactose with "sucrose containing not more than 3.25% of starch" as a diluent for pancreatin. Use of this same diluent was made official March 1 for N. F. preparations requiring lactose. The replacement was authorized in the official compendia because of the shortage of lactose resulting from use of great quantities of milk sugar for penicillin culture media.

APPLICATION FOR MEMBERSHIP

American Pharmaceutical Association

Approving of its objectives, I hereby apply for active membership in the American Pharmaceutical Association and subscribe to the "Journal of the American Pharmaceutical Association." Enclosed is $____ for membership dues with subscription to the ☐ Practical Pharmacy Edition at $5; ☐ Scientific Edition at $6; ☐ Both Editions at $7.

Name in Full_____

Number and Street_____

Town_____ **State**_____

Graduate of_____ **Year**_____ **Degrees**_____

I am a registered pharmacist in _____ and am engaged or, in the case of retirement, was engaged as: __ Retailer, __ Wholesaler, __ Manufacturer, __ Drug Importer, __ Teacher, school official or librarian, __ Research Worker, __ Editor, __ Publisher, __ Representative, __ Pharmaceutical Chemist, __ Food and Drug Official, __ Hospital Pharmacist, __ Association Official, __ Pharmacist in Government Service, __ Student.

The applicant named above is recommended by the undersigned two members:

Name_____ **Name**_____

If the applicant is unacquainted with any member of the Association, the officers will aid in securing the necessary recommendations. This application, with the payment of dues for one year, may be sent to any member of the membership committee, the Secretary, or any officer of the Association.

Date_____ **E. F. KELLY, *Secretary*, 2215 Constitution Avenue, Washington 7, D. C.**

THE STORY OF A *Clock*

The sturdy old clock in the factory tower looks down on industry and marvels at the great changes of the last several years. Everywhere industry is keeping step with each tick — not for 8 hours but round and round, day in and day out.

Following the first rumor of quinine shortage, there was set in motion the tremendous activity which brought about an eventual increase of 20,000% in the production of ATABRINE. This drug—often referred to as "yellow magic"—now gives antimalarial protection throughout the world to armed forces and to civilians of the United Nations.

Many other Winthrop preparations are also made on a "round the clock" schedule. Wartime needs are so stupendous, however, that even at this pace supplies are not always adequate for domestic needs.

When your order is not completely filled, bear with us—and please explain the reason for shortages to your patrons.

We thank you sincerely for your patience and understanding in the past.

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A. PH. A. LOCAL AND STUDENT BRANCHES

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California	Alvah G. Hall	Harold S. Runsvold, 257 W. 1st St., Claremont, Calif.	
Canal Zone	Roy T. High	Hilda Kappelman, Box 433, Ancon, Canal Zone	
Chicago	W. Orlo Knight	Byrl E. Benton, 808 S. Wood St.	Third Tuesday
Michigan	Ralph J. Mill	Bernard Bialk, 11655 Hamilton, Detroit	Last Tuesday
New York	Horace T. F. Givens	Frank J. Pokorny, 115 W. 68th, New York City	Second Monday
Northern New Jersey	Martin S. Ulan	C. L. Cox, 1 Lincoln Ave., Newark	Third Monday
Northern Ohio	J. J. Opatrny	Nicholas Avellone, 3687 Avelon Rd., Shaker Hts., Ohio	
North Pacific	Ed. Stipe	F. A. Geue, 1220 S. W. Stark St., Portland, Ore.	
Northwestern	C. E. Smyithe	Charles O. Wilson, College of Pharmacy, Minneapolis	
Northwestern Ohio	Walding Rupp	Bess G. Emch, Univ. of Toledo, College of Pharmacy, Toledo	
Philadelphia	Linwood F. Tice	Madeline O. Holland, 43rd. & Woodland	Second Tuesday
Pittsburgh	Dr. B. F. Daubert	Frank S. McGinnis, Falk Clinic, 3601 Fifth Ave., Pittsburgh	Third Tuesday
Western New York	J. Hill	S. Walley Bower, 435 Tacoma Ave., Buffalo (16)	
STUDENT BRANCHES			
Alabama Polytechnic	Cecil Price	Bobelle Sconiers, 35 Smith Hall, A. P. I., Auburn	
Brooklyn College			
Cincinnati College of Pharmacy	Thomas Thomas	Jack Baumring, 423 W. 8th St., Cincinnati	Second Thursday
Columbia University College of Pharmacy	David Frolich	Eleanor Stark, Congers Road, New City, N. Y., Rockland County	Second Monday
Ferris Institute	Paula Moore	Helen Gettings, Ferris Institute, Big Rapids, Mich.	Second Wednesday
Fordham University College of Pharmacy	Edward Homenick	William Diamantis, Fordham University, College of Pharmacy, New York City	
Howard University College of Pharmacy	Amos Griffin Cranford	Kenneth Richardson, Howard University College of Pharmacy, Washington, D. C.	
Indianapolis College of Pharmacy	Albert E. Jarvis	Joan J. Rosner, 1050 Winton Ave., Speedway (8), Ind.	Third Wednesday
Loyola University College of Pharmacy	Max Burdorf	Margaret Norris, New Orleans College of Pharmacy, Loyola University, New Orleans 19	First Thursday
Louisville College of Pharmacy	Charles Hamilton	Florence Reiger, Louisville College of Pharmacy, Louisville	
Massachusetts College of Pharmacy	Harold S. Bailey, Jr.	(Mrs.) Dorothy M. Dickinson, 179 Longwood Ave., Boston	
Medical College of Virginia	Charles F. Morgan	Marguerite Palmer, Medical College of Virginia, Richmond	Every Other Thursday
Montana State University	Patricia Corbin	Kathleen Hubbard, School of Pharmacy, Missoula	First Thursday
Ohio State University College of Pharmacy	Melvin Chambers	Mary Catherine Enright, Ohio State University College of Pharmacy, Columbus	First and Third Thursdays
Philadelphia College of Pharmacy and Science	Donald W. Davies	William Streeter, 43rd St. and Kingsessing Ave., Philadelphia	
Purdue University School of Pharmacy	Bertha Baron	Cleonice DeKay, Purdue University School of Pharmacy, Lafayette, Ind.	
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Rutgers University College of Pharmacy	Martin Rosenbluth	Frances Vescio, Rutgers University, New Jersey College of Pharmacy, Newark, N. J.	
St. John's University College of Pharmacy	Alexander Chalm	Sister Mary Angeline, 1298 St. Marks Avenue, Brooklyn, (13) N. Y.	Second Friday

Southern College of Pharmacy	William D. Barker	Geo. D. Fleeman, 223 Walton St., Atlanta 3, Ga.	
State College of Washington	Ellis Bull	Dr. Haakon Bang, School of Pharmacy, State College of Washington, Pullman, Wash.	
State University of Iowa College of Pharmacy	Leroy Hayes	Guy K. Dice, State University of Iowa College of Pharmacy, Iowa City	
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University of Illinois College of Pharmacy	Naomi Brown	James B. Statlar, 808 S. Wood St., Chicago (12)	First Wednesday
University of Mississippi School of Pharmacy	C. L. Deaton	William H. Rose, Jr., Box 909, Oxford, Miss.	First Thursday
University of Southern California College of Pharmacy	Otto Lensing	Bernice Johnson, 1583 W. 49th St., Los Angeles	
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University of Texas School of Pharmacy	Mayon Goodrich	Gaile Huckabee, 1910 San Antonio St., Austin (21)	
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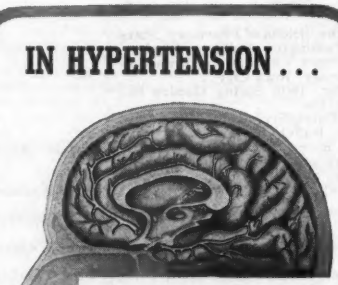

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THE history and activities of the AMERICAN PHARMACEUTICAL ASSOCIATION were discussed by Dr. Robert L. Swain, member of the ASSOCIATION's Council and pharmaceutical editor, at the May meeting of the St. John's University student branch. Tracing the role of the ASSOCIATION in pharmaceutical affairs since its inception in 1852, Dr. Swain pointed out the work that has been done to raise the legal and educational standards of the profession and to improve drug standards through the ASSOCIATION's laboratory and the National Formulary, which was first published in 1887. Since then the two editions of the JOURNAL and the Pharmaceutical Recipe Book have been added to the list of publications promoting the ASSOCIATION's scientific and educational objectives.

At an earlier meeting the St. John's branch heard J. L. Neff, executive director of the American Society for the Control of Cancer, discuss the pharmacy as a community health center and the pharmacist's opportunity to aid in controlling disease. After summarizing present knowledge of the etiology and treatment of cancer, Mr. Neff emphasized that the pharmacist has a real opportunity to add to his professional status by guiding persons with cancer "danger signals" to competent medical treatment, rather than permitting self-medication.

Hubert H. Humphrey, professor of political science and a pharmacist, addressed the Northwestern local branch on "Post-War Planning in Respect to Public Health and to Pharmacy." At the April meeting of the group, Dr. Charles H. Rogers, dean of the University of Minnesota College of Pharmacy, spoke on penicillin.

The part that wines have played in pharmacy and medicine and methods of preparing them were discussed by Dr. Cosmo Ligorio at the May meeting of the New York branch. Dr. Ligorio is a member of the faculty at Long Island University College of Pharmacy and a consultant on wine manufacture.

At the last meeting of the Chicago branch, Dr. D. W. MacCorquodale of Abbott Laboratories reviewed pharmaceutical and medical knowledge on penicillin. At previous meetings, Dr. Ivor Griffith, president of the A. PH. A., discussed

present-day pharmacy and its problems, and Dr. Frank T. Maher, pharmacologist of the University of Illinois, spoke on the anemias following the showing of a motion picture on the same subject.

Members of the student branch at the Philadelphia College of Pharmacy and Science heard Dr. Surver of Jefferson Hospital speak on anesthesia.

Motion pictures on tuberculosis, pneumonia and water safety were shown at the May meeting of the State College of Washington student branch. At an earlier session, G. A. Lukens of the Washington State Pharmaceutical Association discussed qualities of a competent pharmacist and the current picture in retail practice.

A paper on "Blood and Blood Substitutes" was presented by Dr. Max M. Strumia at the meeting of Philadelphia local branch. Dr. Strumia is director of the laboratories at Bryn Mawr Hospital and faculty member of Pennsylvania Medical School.

MUSICAL ABILITY UNIMPROVED BY MARIHUANA-LIKE DRUG

Recurring reports that some musicians, particularly members of dance bands, use marihuana to enhance their musical ability has led Dr. C. Knight Aldrich of the U. S. Public Health Service to make an objective study of the effects of the drug when used for this purpose.

A synthetic, marihuana-like pyra-hexyl compound was used for the tests because of the drug's uniform potency and consistent effect. Marihuana users report that the psychological effects of this compound are qualitatively the same as those of marihuana.

For the purpose of the test a dozen musicians, who were known marihuana addicts, were given the six Seashore tests of musical talent. In two series of tests without the drug, the musicians improved on the second trial due to practice. After administration of 60 mg. of the pyra-hexyl compound, the tests seemed to show that the drug merely obliterated the improvement due to practice, and on the average did not bring about an improvement in judging pitch, loudness, rhythm, time, or timbre or in tonal memory.

"Although 9 out of 12 subjects achieved poorer scores after using the drug than on the previous trial," Dr. Aldrich reports (*Pub. Health Rep.*, 59:431, 1944), "8 out of 12 expressed the opinion that their scores had improved, and one recognized a loss in efficiency."

The tests used measured only sensory musical capacity and not such factors as motor speed and coordination, fatigability, or release of inhibitions.

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